BRITISH MEDICAL JOURNAL

LONDON SATURDAY FEBRUARY 26 1938

TRAUMA OF THE HEART*

BY

HUGH BARBER, M.D., F.R.C.P.

Physician to the Derbyshire Royal Infirmary and to the Derby City Hospital

Trauma of the heart may result (1) from wounds and direct violence and (2) from strain of effort. Wounds of the heart are not common in this country, and will be excluded from this discussion. Direct violence to the chest wall may rupture the heart muscle, causing death, or may cause death without obvious heart injury; or it may give rise to the following clinical conditions: (1) pericarditis; (2) angina of effort; (3) a disorder of rhythm; (4) lesion of a valve; (5) contusion of the heart muscle. Strain may result in: (*a*) a disorder of rhythm; (*b*) lesion of a valve; (*c*) primary cardiac overstrain.

Spontaneous rupture of the heart muscle is, of course, the result of coronary disease. Goodall and Weir (1927) record eighteen cases, but in only four was there evidence of emotion or strain. Such an event can hardly be included in trauma of the heart.

Genuine cases of heart disease the result of injury or sudden strain are not very common. There is nothing distinctive about the physical signs. For a diagnosis we depend upon an accurate history and, if obtainable, previous personal medical knowledge of the patient. Many doctors can quote one or two cases in which they were convinced that trauma produced disease of the heart, or that it so aggravated the condition of a heart already diseased that the whole life-history was changed. A traumatic heart lesion shown at a clinical meeting will provoke criticism, because the physical signs will be similar to those met with in disease due to natural causes, and it must be demonstrated that the condition before, at the time of, and immediately after the trauma has been correctly assessed. Nevertheless, I believe that at the present time more cases of heart disability the result of trauma are overlooked than are diagnosed by mistake.

During the last thirty years I have made brief notes of twenty cases in which trauma of the heart must be considered seriously. Twelve have been the result of direct violence and eight the result of strain, although in three of them both forms of trauma may have been acting together. One man with a traumatic lesion of the mitral valve was under observation for seventeen years until he died, when the trauma was confirmed at necropsy. In the twelve cases of direct violence it is safe to presume that the heart was normal before the injury. In three of the eight cases due to strain it is presumed that the heart was already diseased, but the strain altered the whole life-history. A reasonable definition of a normal heart would be: one that is efficient for the age and usual activities of an individual, and which would show no abnormality on examination with all the methods at our disposal.

Recorded cases in medical literature are difficult to collect, although there are examples typical of many well-recognized possibilities. It is reasonable that standard medical textbooks should be very guarded in relation to injuries of the heart. These play a small part in the natural history of disease. Books written as a guide in compensation cases are helpful in classification and make valuable reading, but they aim at a finality of statement that is not always in keeping with such an individual problem as injury. Allbutt (1870) wrote chiefly from the point of view of the part played by overstrain in artisans in producing degeneration. He made a point that he gained wide experience in the industrial area of Leeds. In mentioning certain cases in which a sudden strain appears to have caused structural damage he suggests that these may be extreme instances of an agency always at work, in some degree, in those who do heavy manual labour. He concludes: "But when we come to refine upon labour and endeavour to separate it into two categories of sudden and continuous efforts we find very often that the distinction is almost impossible." There are, however, a number of cases where the distinction can be drawn between sudden and continuous effort: and a number of cases of trauma or alleged trauma of the heart in those not engaged in heavy work—that is to say, the result of an exceptional event in one unsuited to the effort. And disease of the heart may result from the direct violence of a blow on the chest wall.

The study of traumatic heart disease resolves itself into two problems: (1) whether the heart be diseased at all—which is perhaps the more difficult; and (2) whether a cardiac disability is due to trauma or to natural causes. For this latter consideration the physical signs are almost negligible. A detailed and accurate history, in the widest sense, is all-important. The patient must be studied as a witness, and also his relatives. Not less important is a reliable family doctor who knows his artisan patients personally and makes a note when first called in. It is my association with a number of these who attend clinical meetings regularly which encourages me in the attempt to assess some of the evidence about trauma of the heart.

Some Post-mortem Records of Heart Trauma

1. *Without External Bruising or Injury to the Chest Wall.*—Groom (1897) was called to a boy of 16 who had collapsed while walking, and found him dead. A month previously the shaft of a pony trap pressed him against some railings. He lay up for five days. There was no external bruising. Post

* From addresses to the Derbyshire Branch of the British Medical Association on October 27, 1937, and to the Derby Medical Society on November 9, 1937.

mortem the left ventricle was seen to be ruptured posteriorly. It appeared to have developed from the endocardium outwards, with eventual haemorrhage into the pericardium. O'Neill (1914) described the case of a boy aged 9 who was "knocked down and jumped on." There were certain bodily injuries, so that he was kept quiet but not absolutely at rest. The heart was not specially examined. He died forty-seven days later, and a perforating slit was found at the auriculo-ventricular junction on the left side, with haemorrhage into the pericardium. Hamilton (1934) recorded the case of a child of 7 years brought in dead to hospital. The front wheel of a car had passed over the chest wall without causing external bruising or damage to the bones. Both ventricles were ruptured. Fraser (1929, quoting Vaquez-Laidlaw) describes a man who was struck by a carriage pole. He was admitted to hospital with dyspnoea and palpitation. There was an unusual sound at the base of the heart. The symptoms soon cleared up and he was discharged. He was readmitted several months later with congestive heart failure, from which he died. Post-mortem examination showed laceration of the heart muscle in the region of the conus arteriosus. Wilks (1865) recorded the case of a young man who fell from a height, striking his left side on a stone. He died two days later from peritonitis due to a ruptured bowel. Dyspnoea had been present, but a stethoscope was not used. No external bruising was seen at necropsy. The posterior cusp of the aortic valves was split transversely, but there was no sign of chronic disease of the valves. A small deposit of fibrin was found on the ragged edges of the valve. Gibson (1909) recorded a case, in the Edinburgh Royal Infirmary, of rupture of the mitral valve from the kick of a horse.

2. *Experimental.*—Kahn and Kahn (1928) state that it has proved possible in the dead subject to rupture a valve by striking the chest, without injuring the bones of the thorax. Allbutt (1909) gives the names of several distinguished pathologists who have succeeded in this.

3. *With a Fractured Sternum.*—At a coroner's post-mortem recently at the Derby City Hospital I was present when Dr. Osborn demonstrated disease of the aortic valves very suggestive of being the result of trauma. There was an old fracture of the sternum over the base of the heart. The man was wounded during the great war, when a front-line soldier, so that presumably his heart was normal. Whilst he was in a casualty clearing station the sternum was fractured by a fall of roof during an air raid, after which he was invalided out of the service. The history is so fragmentary that it is not possible to make a definite diagnosis of traumatic disease of the aortic valves, but it is the most probable explanation. The aorta itself was particularly healthy, as also was the mitral valve.

Clinical Conditions which may Result from either Direct Violence or Strain, or from Both Together

DISORDERS OF RHYTHM

1. *Auricular Fibrillation.*—Of this condition Price (1937) states: "Its onset can now and then be traced to bodily effort, especially in the middle-aged or elderly, perhaps to trauma." This is what we should expect from the natural history of the condition. The event is more probable if the disposing causes of age or mitral stenosis exist. White (1937) states that it may result from direct trauma, excitement, or exertion. In some accidents all these causes will be present, as in two of my cases recorded below. It is surprising to find the statement in a book on incapacity or disablement (Brockbank, 1926): "I have never met with a case in which auricular fibrillation could be attributed to sudden strain, and at present I should be very unwilling to believe that strain could cause it." Hay and Jones (1927) recorded five cases of auricular fibrillation, of which four were due to sudden physical exertion and one to electric shock. They state that four of the patients were apparently well before the exciting cause or accident. They claim that sudden strain frequently initiates auricular fibrillation in diseased hearts, and in addition that fibrillation may result from physical strain in hearts that are apparently normal, so far as can be determined by ordinary clinical methods. As a typical example of the result of strain on a diseased heart I have the following notes (1934).

W. H. P., aged 46, gave a history of rheumatic fever twenty years ago. He was refused for war service, but led an active life, in good health, working on an estate. His doctor knew that he had mitral stenosis. One day, while carrying a tree-trunk, his mate failed and W. H. P. had to bear the whole weight. Pain and discomfort developed in the chest, and he had difficulty in getting home on account of shortness of breath. He passed one or two restless nights, after which his doctor diagnosed auricular fibrillation. Seen four months later, the fibrillation was confirmed by electrocardiogram. The mitral stenosis was obvious. There was no congestive failure. The exercise tolerance was poor. A course of quinidine in hospital produced toxic symptoms, but failed to restore normal rhythm. The arrhythmia has persisted since.

Kahn and Kahn (1928) record cases of auricular fibrillation following direct trauma of the chest wall. I have seen two such cases, after a man had been knocked down by a motor car. There has been no evident bruise on the chest wall or actual history of a blow over the heart, so that both direct trauma and sudden strain may have acted together. Both were elderly, and possibly liable to the disability, but in good health for their years.

T. C., aged 61, acting as a night watchman, was knocked down by a car on January 21, 1932. He was taken to the casualty department at the Derbyshire Royal Infirmary; about this he remembers little. After being detained for a few hours he was sent home by car to rest in bed. He noticed he was short of breath, and his doctor recognized an irregular pulse. The shortness of breath persisted, and although his external injuries were trivial it was obvious that his capacity for exertion was entirely changed. Seen by me in December, 1932, the fibrillation was confirmed by electrocardiogram. There were no other abnormal signs, or other abnormalities in the tracing. There was no congestive failure. Five years later his condition was unchanged.

Mr. W., aged 63, was knocked down by a car on December 22, 1936. He was taken to the Derbyshire Royal Infirmary, where an irregular pulse was noted. He was kept in a surgical ward for fourteen days' rest on account of a scalp wound. On returning home he was dizzy and easily became short of breath. His doctor noted the irregular heart. Seen on February 3, 1937, he was of excellent physique for a man of his years, with the history of an active life. Physical examination revealed nothing abnormal except the arrhythmia, which was confirmed as auricular fibrillation by electrocardiogram. I understood he was making no claim, because he considered himself entirely to blame for the accident. But there was no question that a heart previously efficient for his life was now causing incapacity.

Both these cases illustrate the need for more accurate notes after an accident. This history of scalp wound is of interest because Bramwell (1934) has recorded the case of a coal-miner in whom auricular fibrillation was present after a blow on the head. He is rather guarded about attributing the fibrillation to the trauma, although the evidence strongly suggests it.

2. *Auricular Flutter.*—The disposing causes of this condition are similar to those producing fibrillation, but I have seen no reference to trauma as an exciting cause.

One case of auricular flutter came under my own observation in 1935 after a fracture-dislocation of the cervical vertebrae. From the hospital records it would seem that flutter developed several days after the accident whilst in bed. It is difficult to find a reasonable explanation, but the fact remains that when the patient had recovered from his surgical injuries he was totally incapacitated by reason of the heart

condition. There was evidence of a hypertensive heart, but one cannot entirely ignore the injury as a possible exciting cause of the fluttter.

C., aged 58, with good health, had not seen a doctor for ten years. A signboard fell on his head, and he was admitted to the Derbyshire Royal Infirmary with a fracture-dislocation of the cervical vertebrae. The pulse chart records the rate as between 80 and 90 until the tenth day, when it is 120, at which level it persisted. Seen in July, 1935, about three months after the accident, when he had returned home, he was getting about, but was short of breath on exertion. The pulse was regular, the rate being 120 to 130. The blood pressure was 160 mm. systolic and 100 mm. diastolic. The heart was enlarged. An electrocardiogram showed a tracing typical of auricular flutter, with a ventricular rate of 120 and an auricular rate of 240. One may conclude that there was a hypertensive heart before the accident, but that the auricular flutter developed about ten days later.

3. *Extrasystolic Arrhythmia.*—Kahn and Kahn (1928) record a case of extrasystolic arrhythmia the result of direct injury of the chest wall. But such irregularity is not a definite entity and is no disability in itself. One may only conclude that there is an irritable focus in the heart muscle. The case in question may have been a contusion of the heart, or it may be that the rhythm was disturbed from a neurosis. As an example of such arrhythmia following injury I have the following notes.

J. H., aged 46, was gored by a bull. He was unconscious for twenty-four hours and was detained in hospital three weeks. There was a large scalp wound. Three lower ribs were fractured on each side. It was noted that the pulse was irregular. Four months later the exercise tolerance was poor and the heart showed numerous ventricular extrasystoles. The irregularity persisted a year after the accident. Physical examination and an electrocardiogram showed no other changes. He was capable of taking a fair amount of exercise without discomfort, but had not regained his full capacity. This case is complicated by the fact that he had a primary syphilitic lesion during the war and the Wassermann reaction is still positive.

A heart which is irregular on account of extrasystoles may be the only abnormal finding after some sudden strain. It is an important problem. The prognosis and treatment depend upon the underlying cause of the premature beats. Some cases are probably due to a strained heart and others to a neurosis. We may discuss the question under the heading of "primary cardiac overstrain," although it is understood that not all cases of strain or alleged strain exhibit extrasystoles.

VALVULAR LESIONS

Rupture of a valve from strain or direct violence illustrates the importance of a correct history, because it is upon this that the diagnosis is based clinically; and even after death the history is required to make the diagnosis certain. There will be immediate and urgent distress, with pain which is obvious in lesions due to effort, and, unless masked by external injuries, equally obvious in direct violence.

Rupture of an aortic valve from strain was described by Peacock (1865a). It is an accident that is not very uncommon. The valve is almost certainly diseased before the effort, although functioning reasonably well. For an insurance company I obtained the following history from the late Dr. Bruce of Melbourne, Derbyshire:

A farmer, aged 56, pushed a cart out of a ditch. There was immediate substernal pain with distress and palpitation. He managed to walk very slowly to the doctor, and said he could hear a noise in his chest since the effort. There was a loud to-and-fro aortic bruit. He died of congestive failure a few weeks later.

Traumatic lesions of the mitral valve are rare. Allbutt (1870 and 1873) recorded three cases of rupture of a mitral valve from strain. Gordon (1922) described a case of lesion of the mitral valve from strain while running.

It was in a young woman of 24, who afterwards could hear a noise in her chest on exertion. He considered that the lesion was slight. He also describes a man in whom the aortic valves were ruptured from a blow, and who died soon afterwards.

Peacock (1865b) described the case of a girl of 19 with valvular heart disease in which the symptoms were not serious.

She had a severe attack of vomiting, followed by immediate distress and death in a few hours. At necropsy there was chronic rheumatic endocarditis of the mitral valve; the chordae tendineae were ruptured, so that one cusp of the valve was entirely loose. Horton-Smith (1902) described rupture of chordae tendineae in a workman aged 33, due to a strain. There was immediate pain with shortness of breath, followed by passive congestion. He died in three months; at the post-mortem examination the valves showed no evidence of previous disease.

I have recorded (with Osborn, 1937) full details of a case of mitral stenosis the result of trauma.

A man 32 years of age joined up at the beginning of the war in 1914 with a previous history of good health and athletic activity. He served a year in the front line. In 1915 he was blown up and buried in the debris. A day or two later he recovered consciousness to find his heart very distressed. There was no external injury. He was five years in one hospital and another. From 1919 till his death from pneumonia in 1937 he was under my own observation. It was obvious in 1919 that the mitral valve was diseased, there being a systolic bruit and a localized mid-diastolic sound. Five years after the injury he could sit out of bed, and gradually he improved. By 1930 (fifteen years after the injury) the signs were indistinguishable from those of mitral stenosis of rheumatic origin. There was a presystolic thrill and localized presystolic bruit. His condition remained stationary. When he died from pneumonia twenty-two years after the injury the stenosis was very obvious and there were features which confirmed beyond doubt the diagnosis of trauma.

The evidence is conclusive that the mitral valve was normal before the trauma. The same applies to Wilks's case of ruptured aortic valve from a fall. It is this feature which makes direct trauma of a valve particularly interesting, because a blow might produce a less serious lesion, whereby a slight tear or contusion of a valve would progress towards chronic valvular disease when healing. Allbutt (1873) described two cases of mitral stenosis in young men—in one case due to the kick of a horse and in the other to a blow with a cricket ball. The immediate distress at the time of the injury was alarming, but the heart's function was not distressed soon afterwards to a degree that would indicate rupture of a valve. Allbutt saw each patient about a year after the blow and found definite evidence of mitral stenosis, which he attributed to trauma. These cases were recorded a long time ago, but the diagnosis can only be based on observation and assessment of the history and clinical evidence. No modern facilities would help to prove or disprove the diagnosis of a traumatic valvular lesion.

Clinical Conditions which may Result from Direct Violence but not from Strain

1. *Pericarditis.*—Traumatic pericarditis is a well-recognized possibility as the result of a blow on the chest wall. In itself it is not serious; and it may not have been searched for sufficiently often in the surgical wards. A

pericardial friction sound may have been overlooked in some patients with severe chest injuries, in whom the possibility of a contusion of the heart must be considered subsequently.

2. *Angina Pectoris.*—Fraser (1929) gives evidence of angina of effort resulting from direct injury to the chest wall. There are also references in the German literature.

I have recently attended a man 57 years of age. He was in charge of a cart when the horse bolted and the shaft struck him over the sternum. He was laid out on the ground for a few minutes, and then slowly, with distress, walked a short distance to a farm. He was sent to hospital next day, where fracture of sternum and ribs was excluded. He was short of breath on slight effort, with pain and aching in the chest. When he began to get about, in three weeks' time, the symptoms of angina of effort developed. The shortness of breath has continued; and his case may be included under the heading of a possible contusion of the heart.

White (1937) states that fatigue of nervous type may dispose towards angina. In the foregoing patient there is this type of nervous problem to consider. I believe that the angina of effort in his case is the result of trauma. Lewis (1937) writes: "Angina pectoris and cardiac failure never can find equivalents in the terms of structure."

As an example of angina of effort the result of direct injury to the chest wall the following case is of significance because there is no question of compensation. The diagnosis is based on what the man himself and his doctor can tell us.

W. H., aged 54, has always had good health. On June 14, 1937, he tried to jump on to the rear of a lorry, which moved; he fell on his left side rather heavily, sustaining a cut head and bruised elbow and hip, and "his ribs were sore." There was no immediate discomfort, apart from his bruising; but a fortnight later, when recovered from this, he noticed that when walking briskly for a bus he got a gripping pain in the chest, radiating down the left arm, and he had to stop. This discomfort became more frequent and occurred on very slight exertion, such as mounting stairs; so that after doing a fortnight's work he had to give up. The heart was recorded as irregular and the rate unduly increased on exertion. In August the attacks were less severe, but they persisted. The pulse was regular. He has improved, but in December would still get angina with moderate exertion. On December 7, seen by myself, the heart showed no abnormal signs and an electrocardiogram was normal. The exercise tolerance was rather poor, but he was proposing to go back to his duties, which are clerical. He did not feel capable of working in his garden.

3. *Heart-block.*—This form of arrhythmia indicates a lesion deep-seated in the myocardium. It may possibly arise from direct violence; that it may result from effort is very improbable. Walker (1933) states that heart-block has been recorded after a blow on the chest wall. I have no personal knowledge of such a case, but some of the post-mortem lesions described above, which have been the effects of direct violence without any external injuries, will illustrate the fact that such an exceptional event as injury to the auriculo-ventricular bundle, with survival of the patient, is possible. White (1937) states that it may result from direct trauma. Coffen (1930) described complete heart-block, persisting seven years, after a child 3 years of age had fallen four or five feet on to his chest. There was no external bruising. "Just before the accident he scored 98 per cent. in a baby clinic examination." The slow pulse, which persisted, was recognized within a few hours of the accident.

4. *Contusion of the Heart.*—It is of course well known that a severe blow on the chest may cause death without anything definite being found in the heart post mortem. Some such examples have been the result of diving. Certain of the ruptured hearts described above in which the accident was survived for a time may be regarded as severe contusions which have eventually ruptured into the pericardium. To diagnose a contusion of the heart muscle is a difficult problem. White (1937) states that contusion or even partial rupture of the heart wall is probably much more common than has been thought in the past, because of the usual recovery. He suggests that an electrocardiogram taken early might show changes in the T waves, which would be transient. It might be of interest to search in the surgical wards for examples of contusion of the heart.

I was asked to see a case of "bronchitis" in a surgical ward on September 16, 1937. A man aged 58 was admitted three days previously after a severe blow over the sternum from some timber. There was pain and dyspnoea. An *x*-ray examination excluded fracture, and the heart shadow and lungs were normal. The pulse rate was 80, and regular. The heart showed no abnormal signs, and an electrocardiogram was normal except for inversion or biphasic P wave in Lead III. There was no evidence of bronchitis and the temperature was normal, but the patient was expectorating moderate quantities of frothy serum. It was exactly comparable to the fluid coming up in acute pulmonary oedema but in much less amount. The physical signs in the lungs were quite normal, except for slightly deficient vesicular murmur, equal at both bases. I should conclude that the circulation through the lungs was inefficient on account of a contusion of the heart muscle. He was discharged after four weeks, having been about the ward for a few days. When he returned home he was short of breath on exertion. He began light work about two months after the accident, but could not carry anything up stairs or climb a ladder without distress. Examined on November 30 there were no abnormalities, except a poor exercise tolerance. The pulse rate was 84 at rest, was 100 after dressing, and rose to 144 after slowly climbing some stairs; he was short of breath. The electrocardiogram showed no change.

I have seen six other men in whom the heart appears to have been inefficient after a severe blow on the chest. There has been no record of the heart condition soon after the accident; it has only been considered weeks or months later, on account of shortness of breath on slight exertion. My first example (Barber, 1912) was lost sight of during the war, and the other five are alive. In two cases the sternum was fractured, and in two several ribs; the fifth and sixth cases are recorded above, with angina of effort. The others were aged 27, 46, 50, and 53 years, and they have never recovered fully. The symptoms have been shortness of breath on slight exertion, with dizziness. There has been left mammary pain to some degree, but true angina in only two cases. The heart showed no abnormal signs on examination, and the electrocardiogram was normal: in no case was it taken until several months after the injury. The only evidence of myocardial weakness has been inadequate response to effort. Under these circumstances it is easier to convince oneself than to produce evidence which can be recorded. White (1937) draws attention to the fact that neuro-circulatory asthenia and muscular flabbiness are more easily exposed by exercise tests than is true heart disease. Two of my patients have been colliers, whose muscles have been in reasonable training, and none of them has had the "irritable heart," unsteady under observation, which one tends to meet with in the effort syndrome. An exercise test which is reliable, even if it cannot be standardized, is to lead a patient along the hospital corridors to another department and set him talking by the way. If the proof of an inefficient heart be accepted, it is following the teachings of Lewis (1937) "not to make the attempt to diagnose in the terms of anatomy but in the more certain terms of

function." The condition has been more like the senile heart than any other condition due to natural causes. The following typical example may be cited:

H. B., aged 50, a collier. Five years ago a steel bar crushed his chest against the roof of a coal-mine, causing fracture of five ribs on the left side. He was three weeks in the Chesterfield Hospital and three months an out-patient. He returned to work, but gave up after three days because he was short of breath on exertion and dizzy, especially after stooping. He has worked for short periods since, but has always required extra help from his mates. He has remained short of breath on exertion, with some aching in the left side. His general condition and muscular tone were good. He was a steady and reliable man of the best type. The chest expansion was 2½ inches. *X*-ray examination showed a heart of normal size, with the lungs clear and the ribs united. The arteries were healthy. The blood pressure was: systolic 115 mm., diastolic 75 mm. The heart showed no abnormal signs, and an electrocardiogram was normal. The pulse rate was 96 on arrival; it was 84 after a short rest; after slowly climbing eighteen stairs it was 140, and he was short of breath. While walking slowly he was incapable of talking without exhibiting shortness of breath.

Primary Cardiac Overstrain

In studying this difficult problem the type of strain causing the disability, or alleged to cause it, may be of three possible varieties, which must overlap to some extent, but of which the typical examples are quite distinct. These are: (1) the strain of athletic event, (2) the effort syndrome, and (3) the intense unexpected effort for which a man is not trained and during which the chest is probably fixed, with the glottis closed.

1. Strain in athletic event is almost confined to those taking part when suffering from some infection. Occasionally the untrained man may disturb his heart with a rowing or climbing effort.

2. The effort syndrome, strictly speaking, has little relation to strain, except in the differential diagnosis from overstrain. In its most characteristic form it first shows itself during some effort which a man has carried out before. During the war the first impression may have been that the symptoms developed as the result of physical over-exertion and mental emotion, acting on those unsuitable for the strain. Probably to some extent this was the explanation. In civilian life it occurs in women as well as in men. The modern view is that effort does not cause the condition, but calls attention to it. At the same time it is admitted that it sometimes develops after a severe effort, and also that in spite of the best of treatment some of the subjects must be warned that they are unsuited for strenuous callings.

3. The intense unexpected effort usually comes about, with the chest fixed and the glottis closed, during a lifting effort which is unexpectedly strenuous or prolonged. Perhaps the effort cannot be relaxed without some disaster occurring. Anxiety on this account may directly affect the heart capacity at the time. It is this type of effort that is most likely to damage the heart. The following brief notes will illustrate a clinical example.

J. B., aged 30, was carrying a bag of cement weighing two hundredweight across a stream. His foot slipped, and he made a very considerable effort to save the bag from falling into the stream, which would have ruined the cement. He had acute distress in the left side of his chest and collapsed on the ground. This was in the middle of the morning. He went on doing light work all day, suffering from palpitation and shortness of breath. He walked home a mile or two very slowly with his father, for whom he worked. He went to bed and passed a restless night. His doctor kept him in bed three or four days, after which he got about a little. The palpitation and shortness of breath continued to some extent for two years. Physical examination at this time showed a pulse rate of about 100 when out of bed, with occasional ventricular extrasystoles after resting from exertion, to which there was poor response. He was of good athletic physique. Before the event in question he was in excellent health. He served four years in the war, during which time he won a three-mile race without discomfort.

For myself I should diagnose primary cardiac overstrain chiefly on the history. If one has understood the theory as usually taught of the reaction of the heart to effort I suppose the original conception would have been that the heart had suffered from acute dilatation. Allbutt diagnosed the condition on himself, although it led to no permanent ill effects in his case. The teaching followed that the heart did not dilate during effort. Wilson (1930) recorded exceptional circumstances which enabled him to note what he regarded as dilatation of a heart after effort, with quick return to normal. In the correspondence columns Wilkinson (1930) suggested that the dilatation in Wilson's case was only apparent, and that the diffuse impulse was due to forcible beating, adding at the same time that he did not believe that either dilatation of the heart or the strained heart existed. Those of us who believed that strain had sometimes injured a normal heart were prepared to consider whether forcible beating might injure it. Lewis (1932) recorded examination of the heart under the *x*-ray screen, with inspiration held and the glottis closed. He states that it is seen to dilate very greatly. There was abundant evidence that healthy men could perform this test with impunity. S. A. Smith (1931) wrote of the "erroneous diagnosis of acute dilatation of the heart." But if enough clinical evidence based on the judicious assessment of case-histories is forthcoming it is interesting to speculate that we may come back to the simple conception, which was accepted a generation ago, of acute dilatation from strain. It seems a reasonable possibility in the untrained average man undergoing an exceptional strain with the glottis closed. There may have been some defect in the pericardium or heart muscle, but examination would not have detected it, and disability would not have resulted had there been no unusual event.

It is not a common occurrence. I think I have seen four examples of hearts diseased from strain that were apparently healthy before an exceptional effort. Two have never recovered fully. The diagnosis from the effort syndrome is very difficult. Shirley Smith (1932) summarized the symptoms which simulate heart disease. There is no absolute proof of strain in any of my cases. The diagnosis has been based on the probabilities in relation to the man, the history of effort, and the report from his doctor, although a consistent non-varying degree of disability is taken to be suggestive of genuine heart disease.

S. A. Smith (1931) explains all the cases of what he calls "the erroneous diagnosis of acute dilatation" as due to a cardioneurosis, usually supervening on a minor superficial injury. I have seen a typical example of pain of muscular origin at the lower end of the sternum on the left side, from a lifting effort, for which the heart came under observation. The man could walk quickly without discomfort, and merely required reassurance. The pain passed off in a week or two. He was not a manual worker, but it is reasonable to suppose that if he had been compelled to go back to work that aggravated the pain he might have developed a cardiac neurosis. Pain which persists, however, is not a feature of primary cardiac overstrain.

It may be difficult to decide whether a man has strained his heart or whether he is suffering from the effort

syndrome or, to use the transatlantic term, from neuro-circulatory asthenia. But from the all-important point of view of treatment the problems are not so essentially different. A short rest will be suitable for both; reassurance will help both, as also will suitable exercise and retraining. When it is admitted, as most people will, that in the effort syndrome group a man must sometimes be warned that he is not suited for intense or prolonged effort the practical considerations are identical. The divergence arises on account of compensation litigation on the one hand and of theoretical prejudgment as to whether the normal heart can be strained on the other.

The American teaching (White, 1937) seems to be that heart symptoms or signs that follow industrial strain or accidents are usually of the neuro-circulatory asthenia type, or are due to aggravation of heart trouble already existing. But Donahue (1927), in an article entitled "Accidents and Heart Disease from the Court's Point of View," writes: "We do have a great many cases of dilatation of the heart occurring at work while the employee is under some particular strain. He is lifting some unusually heavy load, or is in a rather awkward position doing heavy lifting, when he has dilatation and becomes sick, sometimes collapsing immediately." If we leave out the word "dilatation" the events are as described. Probably some are due to rupture of pectoral muscle fibres, with a cardiac neurosis superimposed. Probably some are due to the effort syndrome, to which the event has called attention. But the probability still remains that some are due to strain of the heart muscle or of the pulmonary or aortic ring. It would be in the best interests of medical science if such cases came before a medical board. We could study them with a mind more open. In those industries where there is a medical adviser to the firm he should include judicious management of the case in his decision.

We can remember that a generation ago sometimes the strained heart was diagnosed, quite mistakenly, on the evidence of a negligible systolic bruit in a growing boy. Invalidism on this account is a thing of the past. The profession has learned that the effort syndrome requires guidance and retraining, lest a selfconscious heart become permanent. Much semi-invalidism has been prevented by the accepted teaching that the heart is the part least likely to break down from exhaustion in some athletic event.

Our knowledge of physical signs and of their interpretation has advanced. There remain, however, some problems which cannot be solved by these means, and the last word must come from reliable clinical histories. By such histories, from doctors who have made notes, I believe enough evidence may be collected to prove that the healthy heart can be strained.

Summary

The forms of heart disease which have been recorded as the result of direct violence to the chest wall or as the result of strain are discussed. The conclusion is drawn that the physical signs on examination are of little assistance in assessing the diagnosis of trauma. Reliable clinical histories, in the widest sense of those terms, must be assessed with judicious care. This includes such evidence as the patient's own doctor can supply.

The clinical diagnosis of a contusion of the heart is discussed.

It is claimed that there is clinical evidence that the normal heart may become diseased as the direct result of overstrain from effort.

With regard to these two conditions, contusion of the heart and primary cardiac overstrain, it is difficult to obtain the proof that the symptoms in question are due to a genuine heart disability, but the probabilities in some cases are sufficient to justify the diagnosis.

BIBLIOGRAPHY

Allbutt, T. Clifford (1870). *St. George's Hosp. Rep.*, **5**, 23.
—— (1873). *Trans. Clin. Soc. Lond.*, **6**, 101.
Barber, H. (1912). *Practitioner*, **89**, 230.
—— and Osborn, G. R. (1937). *Guy's Hosp. Rep.*, **87**, 510.
Brockbank, E. M. (1926). *Incapacity or Disablement in its Medical Aspects*, London.
Coffen, T. H. (1930). *Amer. Heart J.*, **5**, 667.
Fraser, A. J. (1929). *Trauma, Disease, Compensation*, p. 106, London.
Gibson, G. A. (1909). *System of Medicine*, Allbutt and Rolleston, **6**, 381.
Goodall, J. S., and Weir, H. B. (1927). *British Medical Journal*, **1**, 834.
Gordon, W. (1922). *Practitioner*, **109**, 223.
Groom, W. (1897). *Lancet*, **1**, 1202.
Gunewardene, H. O. (1934). *British Medical Journal*, **2**, 942.
Hamilton, J. A. (1934). Ibid., **2**, 1101.
Hay, J., and Jones, H. W. (1927). Ibid., **1**, 559.
Horton-Smith, P. (1902). *Clin. J.*, **19**, 254.
Kahn, M. H., and Kahn, S. (1928). *Ann. intern. Med.*, **2**, 1013.
Lewis, T. (1932 ed. and 1937 ed.) *Diseases of the Heart*, London.
O'Neill, B. J. (1914). *J. Amer. med. Ass.*, **62**, 697.
Peacock, T. B. (1865a). Croonian Lectures, London.
—— (1865b). *Trans. Path. Soc.*, **16**, 67.
Price, F. W. (1937). *Text-book of the Practice of Medicine*, London.
Smith, K. Shirley (1932). *British Medical Journal*, **1**, 129.
Smith, S. A. (1931). *Med. J. Austral.*, **2**, 575.
Walker, G. F. (1933). *The Injured Workman*, Bristol.
White, P. D. (1937). *Heart Disease*, New York.
Wilkinson, K. D. (1930). *British Medical Journal*, **1**, 360.
Wilks, S. (1865). *Trans. Path. Soc.*, **16**, 77.
Wilson, C. (1930). *British Medical Journal*, **1**, 189.

CHANGES IN THE LIVER OF MALE RATS AFTER CASTRATION AND INJECTIONS OF SEXUAL HORMONES

BY

KATHLEEN HALL, Ph.D.

AND

VLADIMIR KORENCHEVSKY, M.D.

(From the Lister Institute, London)

Normal life of the organism is dependent to such a large extent upon the various functions of the liver that any changes observed in this organ need to be very carefully investigated. The manifold effects of castration on the different organs, including the liver, of male rats have been described in a previous paper (Korenchevsky and Dennison, 1934a). In most cases about seventy days or more after castration the actual weight of the liver was on the average 18 to 22 per cent. less than that of the control normal litter mates. When the weights were calculated per unit of body weight this decrease was not so great—namely, 11 to 18 per cent.—owing to the fact that castration also caused a decrease in the body weight of the rats. Histological investigation of paraffin sections did not show any considerable changes, although in some cases the cells of the "castration" liver were more vacuolated than those of the normal control (Korenchevsky and Dennison, 1935).

The injections of purified extracts of sexual hormones from male urine (Korenchevsky, Dennison, and Kohn-Speyer, 1933) into castrated rats were followed by an increase in the weight of the liver up to 32 per cent. (actual) and 25 per cent. (per unit of body weight). Histologically (Korenchevsky and Dennison, 1935) no difference

was found as compared with the controls. Oestrone (Korenchevsky and Dennison (1934b, 1934c) gave more uniform results when injected into normal than into castrated rats. In most cases oestrone caused a slight decrease in the actual weight of the liver, but no change, or sometimes even a slight increase, in that per unit of body weight. The fall in actual weight of the liver was due to the decreased appetite of oestrone-injected rats, with resulting decrease of body weight and of most of the organs, and not to any specific action of the hormone on the organ. Histologically no changes were found, except some increase in vacuolation of the liver cells (Korenchevsky and Dennison, 1935).

Ito and Kon (1935a and 1935b) injected purified extract of sexual hormones from male urine into infantile and adult male rats, and obtained hypertrophy of the liver in the immature rats up to 100 per cent. Bates, Riddle, and Lahr (1937) observed an increase of about 60 per cent. in weight of liver after androsterone injections, and a decrease of about 26 per cent. after oestrone injections, into adult pigeons. It is also important to note that the sexual hormones are accumulated in the liver and excreted in the bile (Gsell-Busse, 1929; Frank and Goldberger, 1930).

Present Experiments

The present paper is a description of the histology of the liver of those male rats in which the effect of injections of pure crystalline sexual hormones on the weights of this organ has already been described previously (see below). At the same time the uninjected normal and castrated control animals used in these experiments gave an opportunity for further study of the effects of castration. The hormones investigated were:

1. Androsterone, androstanediol, and their water-soluble esters (Korenchevsky, Dennison, and Levy Simpson, 1935).

2. Transdehydroandrosterone (Korenchevsky and Dennison, 1936).

3. Δ^4-androstenedione and Δ^5-androstenediol (Korenchevsky, Dennison, and Eldridge (1937a).

4. Testosterone (Korenchevsky, Dennison, and Brovsin, 1936; Korenchevsky, Dennison, and Hall, 1937).

5. Testosterone propionate (Korenchevsky, Dennison, and Eldridge, 1937b; Korenchevsky, Dennison, and Hall, 1937).

Technique

One hundred and eighty-one rats (fifty-one normal and 130 castrated) were investigated. Castration was usually performed at the age of 21 to 24 days, never later than 28 days—that is, always before sexual maturity. In this series of experiments, on the special mixed diet used, the changes in the liver produced by castration and injections became noticeable earlier than in the previous experiments—that is, at the age of about 70 days, about forty-five days after castration. Therefore in Table II the data for rats 70 to 150 days old only are summarized. The doses injected are shown in the same table. The hormones were dissolved in sesame oil and were injected daily, except the oestrogens, which were injected three times a week. Androsterone and androstanediol were injected in some experiments for periods up to fifty-three days, oestrone and oestradiol up to 120 days, and all the other hormones for twenty-one to twenty-three days.

Diet has a considerable influence upon the liver. In the previous experiments (Korenchevsky and Dennison, 1934a) the diet used was chiefly synthetic, while in the present experiment the following diet of natural food products mixed into a paste was given:

Steamed herring, with bones (four times weekly)	1,020 grammes
White bread	1,350 ,,
Milk	1,700 c.cm.
Wheat	230 grammes
Oats (rolled)	230 ,,
Hemp	240 ,,
Wheat germ	75 ,,
Dried yeast	90 ,,
Salt mixture (McCollum's 185)	30 ,,

In addition each rat received twice a week 5 drops of cod-liver oil, 2 grammes of freshly minced liver, and 5 grammes of fresh carrot.

For histological investigation the liver was fixed in Bouin's solution, embedded in paraffin, and stained with haematoxylin and eosin. For fat and lipoids frozen sections were cut and stained with scharlach red. In order to compare the size of the cells, outlines of about seventy-five cells from one lobule of each liver were drawn with the aid of a camera lucida (magnification × 530) from the central vein towards the periphery. The size of these outlines was compared directly, but because of their variability the number of the cells contained in a square measuring 7 × 7 cm. was also calculated, the

TABLE I.—*Average Weights of Liver, actual and per 200 grammes of Body Weight, and Average Comparative Numbers of Lobules and of Cells of Normal ("N") and Castrated ("Ca") Rats.*

Column:	I	II	III	IV	V	VI	VII	VIII	IX	X
Group	Age in Days	Number of Rats in Groups		Weight of Liver (grammes)				Number of Lobules		Number of Cells	
				Actual		Per 200 gm. of Body Weight					
		N	Ca	N	Ca	N	Ca	N	Ca	N	Ca
1	40–49	6	—	8.3	—	10.1	—	6	—	53	—
2	60–69	5	6	10.5	10.9	8.6	8.5	6.6	6.4	52	60
3	70–79	4	10	12.3	9.5	8.7	6.6	6.1	7.1	58	62
4	80–89	7	9	12.6	10.1	7.8	6.9	5.7	7.1	60	61
5	90–99	12	11	13.1	10.5	7.4	6.5	5.1	6.4	54	57
6	100–150	3	4	13.1	10.4	6.9	6.8	5.2	6.3	57	52

TABLE II.—*Average Weights of Liver and Comparative Average Numbers of Lobules and of Cells of Rats aged 70 to 150 Days.*

Column:	I	II	III	IV	V
Group	Hormones Injected and Daily Dose (mg.)	No. of Rats	Liver		
			Weight in grammes		No. of Lobules	No. of Cells
			Actual	Per 200 gm. of Body Weight		
1	(A) Normal Rats: Control, uninjected	26	12.8	7.7	5.5	57
2	Testosterone 0.5–1.5	5	13.0	7.5	5.1	56
3	Testosterone propionate 0.5–1.5	9	13.1	7.9	5.4	56
4	(B) Castrated Rats: Control, uninjected	34	10.1	6.7	6.7	58
5	Androsterone 0.45, androstenedione 0.5–3	15	10.2	7.4	6.3	57
6	Androsterone 0.9–3.6, androstanediol 0.175–0.7, transdehydroandrosterone 1–4, testosterone 0.167–1.4, testosterone propionate 0.167–1.4	51	12.3	7.8	5.9	55
7	Oestrone 0.006–0.018, oestradiol 0.02	12	8.2	7.6	6.8	62
8	Oestrone 0.006–0.018 in combination with the hormones of group 6	12	9.5	7.2	6.9	62

Note.—The greater the number of lobules or cells in the measured area (columns IV and V) the smaller they are, and vice versa.

greater the number of the cells obtained the smaller being the size of the cells. These figures, being more reliable, are given in columns IX and X of Table I and column V of Table II. Actual measurements of the size of the lobules were practically impossible owing to their irregular shape and indistinct boundaries. Therefore the number of central veins of the lobules seen in six to eight microscopical fields at × 90 was calculated, the average figure obtained being given in columns VII and VIII of Table I, and column IV of Table II; the greater the number the smaller the size of the lobules, and vice versa.

Liver of Normal Rats

The data are summarized in columns I, III, V, VII, and IX of Table I. Group 6 contains only a few rats, but the data are similar to those of our previous experiments (Korenchevsky and Dennison, 1934a). Because of the difference in the diet, and because of the different method of killing the rats at the end of the experiment (gas in the previous and bleeding in the present experiments), the liver weight was greater in the former case (Korenchevsky and Dennison, 1934a, p. 239).

Effect of Age.—As was found previously and confirmed in the present experiments, the liver belongs to that group of organs of which the actual weight (column III, Table I) slowly increases with age, while the weight per unit of body weight (column V) gradually decreases after sexual maturity. This seems to indicate a particularly active role of the organ in the young animal. The decline in weight of liver per unit of body weight after sexual maturity might be explained only partly by the accumulation of inactive tissue such as fat, and probably chiefly by the lowering of the metabolism. While the size and the histological structure of the cells show no definite changes with age (column IX), the lobules appear to become slightly larger (column VII), which may partly explain the mechanism of increase in the actual weight of the liver.

Liver After Castration

The data are summarized in columns II, IV, VI, VIII, and X of Table I, and should be compared with the corresponding data for normal animals in the other columns of the same table.

Effect of Age.—In agreement with our previous results (Korenchevsky and Dennison, 1934a) the actual weight of the liver (column IV) about four weeks after castration, in contrast with the normal animals (column III), ceases to increase with age. Moreover, the weight per unit of body weight considerably decreases at the age of about 70 days (column VI) and then remains more or less stationary (Groups 3 to 6). This, as in the case of the liver of normal animals, probably indicates a more active role also of the "castration" liver in the young animal. Histologically no definite alteration was found in the liver at different ages.

Effect of Castration.—Up to the age of 70 days no definite changes were noticed in the livers of the castrated rats, but in most rats older than 70 days the weight of the liver was less than that of normal rats (columns III and IV; V and VI), the difference being on the average 21 per cent. in actual weight and 13 per cent. in relative weight. This difference in weight could in most animals be at least partly explained histologically by the smaller size (22 per cent. on the average) of the lobules in the livers of most castrated animals (columns VII and VIII). The cells themselves, however, were not smaller (columns IX and X), which suggests their hypoplasia rather than atrophy. No mitoses, however, were found in either normal or castrated livers, and the number of binucleated cells was about the same in both groups. No degenerative or any other considerable changes were found in the cells. In about 50 per cent. of the castrated rats the protoplasm of the liver cells in paraffin sections showed an increase of vacuolation (usually only slight) as compared with the normal animals (see also Korenchevsky and Dennison, 1934a, p. 333), but staining with scharlach red showed a definite increase in lipoid granules in only a few cases. The absence of definite pathological changes in the "castration" liver, considered together with the decreased weight of the organ, suggests more a physiological than a pathological decrease in function of the liver after castration.

Effect of the Injections

The data are given in Table II—all were averaged after dividing them into eight groups. The figures in Group 1 (normal) and Group 4 (castrated rats) are the averages for the control uninjected rats aged 70 to 150 days.

Normal Rats.—Testosterone and testosterone propionate injected into normal rats (Groups 2 and 3) did not change appreciably either the weight of the liver or its histological structure (including content of lipoid granules).

Castrated Rats.—Small doses of androsterone produced no definite effect, and Δ^4-androstenedione, in the doses used, only a slight effect (Group 5). Larger doses of androsterone and all the doses indicated of androstanediol, transdehydroandrosterone, testosterone, and testosterone propionate (Group 6) caused in most cases a return towards or actually to normal of the weight (columns II and III) and histological structure (columns IV and V) of the liver. Since the increase was not only in the actual weight of the liver but also in that per unit of body weight, it is unlikely that this change was due to increased appetite and body weight, which usually occur in rats after these injections. Moreover, it is typical that in normal untreated animals greater appetite leads to increased gain in body weight with increased fat deposition. In the rats injected with the above hormones this was usually not the case, since an enlarged liver was present in rats with a decreased fat deposition and sometimes even with decreased gain in body weight (Korenchevsky and co-workers, 1935–7). It is probable, therefore, that these hormones exercise a special stimulating effect on the liver. Oestrogens, on the contrary, whether alone (Group 7) or in combination with the other hormones (Group 8), caused a decrease in the actual weight of the liver, while that per unit of body weight was slightly increased. As already described, this change may be explained by the loss in appetite caused by injections of the oestrogens. In "oestrogen" rats the gain in body weight and in some organs and fat deposition were usually decreased. The histological structure was similar to that of castrated uninjected rats. After injections of any of the sexual hormones used the liver cells, in some cases only, appeared to contain more lipoid granules.

Summary

1. In normal uninjected rats the weight of the liver per unit of body weight decreases with age, which probably indicates an especially active condition of the liver in the young animal.

2. In rats castrated before sexual maturity the weight of the liver (actual and per unit of body weight) at the age of 70 days or more is less than in normal rats, although

histologically the only definite change is a slight decrease in the size of the lobules.

3. Injections of androsterone, androstanediol, transdehydroandrosterone, testosterone, and testosterone propionate returned the liver of most castrated rats towards or to normal weight and structure, while testosterone and testosterone propionate had no appreciable effect upon the liver of normal rats.

4. The absence of pathological changes in the small "castration" liver and in this organ enlarged after injections of the above sexual hormones, as well as the nature of the changes observed, suggests a natural stimulating action of these hormones on the liver.

5. This might have a practical significance in therapy of the liver and some metabolic disturbances if the same effect of these hormones be found in the case of human liver.

6. Injections of oestrone or oestradiol into castrated rats in the doses used caused a decrease in weight of the liver to below that of the control rats but no definite histological changes. The changes in weight observed are probably due chiefly to the depressing effect of oestrogens on the appetite, with resulting decrease in gain of body weight and weight of different organs, including the liver.

Grants from the Medical Research Council and from the Lister Institute have enabled us to carry out this work, and to them our thanks are due. We are also indebted to Professor A. Girard for oestrone and oestradiol, and to Messrs. Ciba, Ltd., in particular to Dr. K. Miescher, for all the other hormones used.

REFERENCES

Bates, R. W., Riddle, O., and Lahr, E. L. (1937). *Amer. J. Physiol.*, **119**, 610 (Table II).
Frank, R. T., and Goldberger, M. A. (1930). Proc. II Intern. Congr. for Sex. Research, p. 378.
Gsell-Busse, M. A. (1929). *Arch. exp. Path. Pharmak.*, **139**, 328.
Ito, M., and Kon, T. (1935a). *Jap. J. Derm. Urol.*, **37**, 87.
—— —— (1935b). Ibid., **37**, 131.
Korenchevsky, V., and Dennison, M. (1934a). *J. Path. Bact.*, **38**, 231.
—— —— (1934b). *Biochem. J.*, **28**, 1474.
—— —— (1934c). Ibid., **28**, 1486.
—— —— (1935). *J. Path. Bact.*, **41**, 323.
—— —— (1936). *Biochem. J.*, **30**, 1514.
—— —— and Brovsin, I. (1936). Ibid., **30**, 558.
—— —— and Eldridge, M. (1937a). Ibid., **31**, 467.
—— —— —— (1937b). Ibid., **31**, 475.
—— —— and Hall, K. (1937). Ibid., **31**, 1434.
—— —— and Kohn-Speyer, A. (1933). Ibid., **27**, 557.
—— —— and Simpson, S. Levy (1935). Ibid., **29**, 2534.

The Royal Prince Alfred Hospital, Sydney, N.S.W., derives its name from H.R.H. Prince Alfred, Duke of Edinburgh, who, when visiting Sydney as Captain of H.M.S. *Galatea* in 1868, was shot and severely wounded while attending a charitable function. As a mark of their gratitude for his recovery the people of New South Wales raised a fund, which was applied to the establishment of the hospital. The fifty-third annual report covers the year ended June 30, 1937. During this period the number of beds was increased from 568 to 762 by the opening of Gloucester House, an additional building which makes available to all classes of the community, at reasonable rates, the resources of a large university hospital. In the same year of expansion the nurses' home has been doubled, a complete psychiatry pavilion with its own operating theatre, *x*-ray room, and special investigation facilities, including a neurosurgical unit of 15 beds, has been constructed, and a new *x*-ray department with the most modern equipment has been completed. In the course of the year under review 10,352 in-patients and 222,272 out-patients were treated in the public hospital, in addition to 1,724 in-patients at Gloucester House.

SCAPULO-HUMERAL PERIARTHRITIS
(DUPLAY'S DISEASE)

BY

A. H. DOUTHWAITE, M.D., F.R.C.P.

Physician, Guy's Hospital

During the last three years I have seen thirty-seven patients (twenty-nine in private, eight in hospital practice) suffering from unilateral painful and stiff shoulder-joint associated with normal *x*-ray appearances. Although, as will be seen later, the antecedent factors leading to this state of affairs differ to some extent, yet the clinical picture is so constant and the treatment so well defined as to justify its description as a morbid entity. In searching the literature for evidence of earlier recognition of the disease, the first and most complete account was found to have been written by Duplay (1872), who recognized, however, only the post-traumatic forms. Mention of the rheumatic types has been made by Chaumet (1934), Douthwaite (1936), Tiegel (1936), and Sievers (1926).

Aetiology

Sex and Age.—There were fifteen males and twenty-two females. The average age was 60 years, and with the exception of two patients aged 33 and 34 they all fell into the fifth, sixth, and seventh decades.

Injury.—Trauma appeared to be the causative factor in twelve patients. In nearly every case it was the effect of a fall either upon the outstretched hands or upon the point of the shoulder. In one person a backward fall from a step-ladder resulted in bilateral disease. The lapse of time between the injury and the onset of typical symptoms—that is, those not simply due to bruising—varied from five days to three weeks.

Rheumatism.—Fibrositis either as simple stiff neck or more often in a widespread involvement of the shoulder-girdle preceded, or merged into, the symptoms of periarthritis in fourteen cases. Apart from the history it is quite impossible to distinguish between the two classes. Two patients had had recurrent gout, but whether this was aetiologically related to the periarthritis is doubtful. In an elderly hemiplegic the disease developed in the shoulder of the paralysed side three months after the cerebral haemorrhage. In eight persons stiff, painful shoulder developed without any apparent cause.

Associated Diseases.—Two patients had diabetes mellitus, and two were subject to gout.

Symptoms and Signs

The outstanding symptom is pain, which with one exception was strictly unilateral. It is often spread diffusely over the shoulder-joint, but sometimes it is referred to the anterior aspect over the long head of the biceps or lower down over the belly of this muscle. In long-standing cases the pain may be much more widespread, even extending to the forearm and fingers. It is of the nature of a dull ache if the arm is kept still, but passes into acute agony in attempted shoulder movement. Often it is of neuritic type, shooting down the limb and partaking of a boring and burning character, and made worse by getting hot in bed at night. Limitation of movement as a symptom is of secondary importance owing to the mobility of the scapula masking the actual fixation. In women, however, it is often a source of complaint that

they cannot reach the back of the head to dress the hair, and both sexes have great difficulty in washing the back. The duration of symptoms before seeking advice was on the average 5.3 months; the minimum was 1 month and the maximum 1½ years. This is to be explained by the fact that the symptoms and signs develop insidiously, and it needs several weeks at the least for the initial discomfort to reach the level of distressing pain.

Limitation of movement is the outstanding sign. The right side was involved in twenty-one persons, the left in fifteen, and both sides in one. Fixation of the joint is best observed from behind. If the patient be instructed to extend the arms the scapula on the affected side will be seen immediately to follow the humeral movement. In abduction this is also well seen, and if the scapula be held firmly to the chest wall and an attempt made to carry this out, acute pain will be experienced. Voluntary abduction is not very painful until the arm has passed through about 30 degrees; but rotation is very painful because the scapula cannot by its movement assist in this to any appreciable extent. A slight degree of muscular wasting is evident in the majority, and affects in particular the deltoid and supraspinatus and infraspinatus. In old-standing cases it is much more extensive, and involves the arm, forearm, and even the hand. In such patients skin atrophy of the fingers, tingling, and loss of peripheral sensation may be noted. The arm is held closely to the side, and the forearm may be flexed and give rise to pain if an attempt is made to straighten it. Tender points are usually to be found, especially over the acromion, deltoid insertion, and long head of the biceps. There is no swelling of the joint, neither is there crepitus.

RADIOGRAPHIC SIGNS

Both Chaumet and Tiegel refer to *x*-ray appearances suggestive of linear calcification in the capsule. When seen the opacity usually extends between the acromion process and the humeral neck. I am quite convinced, however, that such a finding is a rarity and represents a late effect of chronic inflammation. In this series it was seen in only one patient. Actually the characteristic feature of scapulo-humeral periarthritis is a completely normal radiograph, in spite of stiffness of the joint. In two further cases trivial osteo-arthritis of the humeral head was seen, and in two long-standing cases considerable decalcification of the bone was present.

Appearances at Necropsy

The only recorded case of post-mortem examination of the condition is given by Duplay. He treated with manipulation and massage a male aged 53 who developed periarthritis following injury to one shoulder-joint. The result was good and the man left hospital. Two months later he returned with pneumonia and died. On the affected side the deltoid was paler than normal; the subdeltoid tissue was fibrous, exhibiting dense bands running to the upper end of the humerus. The subacromial bursa was obliterated. The tendons of the supraspinati and infraspinati had lost their polish, as had also the inferior surface of the acromion. It was evident that *subacromial bursitis was the chief lesion, with extension to neighbouring structures.* There could be seen ruptured adhesions on the inferior surface of the deltoid. The articular capsule was somewhat thickened, but the articular surfaces were quite normal. Duplay concluded that the pain caused by straightening the elbow was due to tension on the biceps caught up in the subdeltoid alveolar inflammation.

Treatment

Chaumet advises treatment by means of radiant heat, diathermy, and *gentle* manipulations. In obstinate cases he claims to secure good results by the application of *x* rays thrice weekly. He states that even the linear calcification may disappear. Tiegel advises rest in abduction and the application of heat for acute cases. The chronic he treats with fruit juice, raw fruit and vegetables, baths, and exercises. He concludes by referring to the cure of one case. It should, however, be quite obvious from what has been written that only mechanical means can be effective in producing cure. Except in the earliest cases, where rest in abduction and heat followed later by massage may be sufficient, scapulo-humeral periarthritis should be treated by manipulation under anaesthesia. This has been my practice throughout, and has resulted in every case in complete restoration of movement. In all except two patients all the symptoms and signs have disappeared in a few weeks. In the two exceptions pain has persisted to some extent. Evipan or pentothal gives sufficient time for the work. The scapula should be immobilized so far as possible by a band passing around the chest and held on the opposite side by the assistant. Forced shoulder movements must be brisk, and should be carried out in all the normal planes of movement. At certain points resistance will be encountered, and with further effort loud snaps will be heard. If there are a great number of resistant points it is unwise to break down all the adhesions at one sitting.

After-treatment

Post-manipulative pain is usually severe for one to two days. Dilaudid, 1/12 grain thrice daily, should be given for this. The arm must be abducted from the start, but the use of a splint is seldom necessary. If hard pillows are well packed into the axilla the position will be held well enough. Massage to the shoulder muscles and passive movements must be given within six hours of manipulation even though they are painful. Twice daily this physical treatment should be continued, and within three days active exercises should be begun. The ultimate success depends entirely upon the work of the masseuse and the co-operation of the patient. The total duration of treatment varies from two to twelve weeks according to the chronicity of the lesion. Treatment with *x* rays, baths, and dieting is futile and wastes time.

Summary

1. Scapulo-humeral periarthritis probably arises as a subacromial bursitis, with extension of inflammation to subdeltoid tissue.

2. It is caused by trauma or by rheumatism (fibrositis).

3. It is characterized by a stiff painful joint and a normal *x*-ray picture.

4. It should be treated by manipulation.

5. It has no tendency to spontaneous recovery.

6. The prognosis is extremely good (95 per cent. complete recovery; 5 per cent. partial recovery) provided that treatment and after-treatment are properly carried out.

REFERENCES

Chaumet, G. (1934). *Presse méd.*, **42**, 2053.
Douthwaite, A. H. (1936). *Med. Annu.*, **54**, 390.
Duplay, Simon (1872). *Arch. Gén. Méd.*, **2**, 513.
Sievers, R. (1926). *Dtsch. Z. Chir.*, **197**, 326.
Tiegel, W. (1936). *Med. Welt*, **10**, 1844.

A STUDY OF MINERS' NYSTAGMUS

BY

RAYMOND S. BROCK, M.D.

This paper is based upon a study of nystagmus in fifteen pits of North Wales over a period of ten years. The nature of the eye movements is examined and the various theories as to their cause are discussed. The importance of psychological factors is considered and suggestions are offered, first, as to the prevention of disability, and, secondly, regarding a more secure basis upon which disability may be assessed.

The Eye Movements

These are strikingly different from other forms of nystagmus. The "nystagmic" eye movements of colliers are more persistent in duration, are severer in degree, and more varied in type. They may be vertical, horizontal, oblique, or circumductory, but typically are more truly rotatory in direction. They may be of different magnitude in each eye, and the severity may vary in either eye. They are increased by darkness, by elevation of visual regard, and by sudden movements. They may be set up by emotional shock, such as sudden noise. They are lessened by lowered visual regard, by convergence, and by alcohol taken by mouth. They may be recorded on a moving sensitive plate by the "photonystagmagraph," which has been widely used on the Continent, or may be conveniently cinematographed by means of a simple apparatus such as one that I have constructed. By the latter means it is possible to study "stills" of the movements at intervals of one-sixteenth of a second, and these show that the actual excursion is not nearly so great as it appears to be when observed in the ordinary way.

Many theories have been put forward to account for the movements, but one point would appear to receive general acceptance—namely, the chronicity of the condition. An apparently abrupt onset is occasionally met with, but in eighty-three of my cases the average time of onset was 23.3 months, and some men noticed the condition coming on gradually over many years. This accords with the findings of other observers. Contrasted with the frequency of disability from accident at different ages, I have found that whereas this disability reaches its maximum among the younger and less experienced men, and tails off as the age groups rise, nystagmus, on the other hand, shows a relatively high incidence among the older workmen.

Theories of Causation

These may be classified as: (*a*) those suggesting some toxic agency; and (*b*) those which postulate some form of fatigue. An "unknown hydrocarbon" suggested by Pechdo (1893) still remains undemonstrated as a cause. Robson (1923) has suggested carbon monoxide as responsible, but the disorder is sometimes rife in pits where that gas is absent. More recently German observers (Zeiss, 1932; Wiedersheim, 1934) have postulated two cerebral centres—one "position-keeping" and upset by dim light, etc., and the other "co-ordinating" and upset by chronic gas poisoning. The late Professor Haldane (1922a) spent several hours in an atmosphere of 80 per cent. CH_4 and experienced no inconvenience whatsoever. On the other hand, it may be that in certain cases CO plays some part in promoting fatigue. Haldane (1931) demonstrated that this gas was formed in small quantities by the action of air on freshly cut coal, and Graham's analyses (1934) of mine air indicate in some pits enough CO to produce maximal blood concentrations of from 9.7 to 20 per cent. In America it has been reported that prolonged blood concentrations considerably lower than this (5 to 10 per cent.) may give rise to headache, dyspnoea, easy fatigue, tremor of the hands, etc. All these are characteristic in miners' nystagmus. Tachycardia is also common, and the question arises whether nystagmic miners may display any toxic myocardial changes. I have found on electrocardiography that in a series of twenty-four nystagmus cases showing tachycardia there was no indication of a relation between the pulse frequencies and any myocardial toxaemia. On the other hand, the cases all gave typical clinical indications of function disturbance consistent with the tachycardia noted. This may be of importance in assessing disability relative to this physical sign, since the general consensus of opinion appears to be that the myocardium is not in any way affected by tachycardia of a functional character.

A bacterial origin, though suggested, has never been demonstrated (Robson and Freeland Fergus). It has also been thought that infection might be sucked up the Eustachian tubes as a result of varying atmospheric pressure in journeying up and down in the cage, and giving rise to labyrinthine upset (Alabaster, 1933), but this brings us to the various "fatigue" theories, for one of the earliest suggestions was that of labyrinthine upset, arising from the maintenance of difficult working postures, and cases were described in six compositors, a paperhanger, and some other occupations involving a strained upward regard (Snell, 1907). The objections are that the disorder is only characteristic among colliers, and that the movements are entirely different in type, magnitude, and degree from those associated with labyrinthine upset. Moreover, the introduction of "machine mining," which has largely eliminated the old difficult posture, has not allowed any great reduction in the incidence of the disorder.

Ohm (1916) produced nystagmus resembling that of miners in puppies and kittens by keeping them in the dark, and the darkness of the mine is now generally regarded as the most important factor concerned. The condition is commoner in the poorer-lit pits, and is practically unknown in "open-light" pits. The incidence has been reduced in certain observed pits by improvement of lighting, and the late Professor Haldane's words remain true, that "it is only when coal is mined under conditions of excessive darkness that nystagmus results" (Haldane, 1922b).

As to why this should cause the characteristic movements no final answer has yet been found. Some think there may be an acquired pigmentary defect, but others may prefer the suggestion of Dr. T. Gwynne Maitland (1936) of Liverpool, that in conditions of low illumination two ocular reflexes normally occur: one which fixes the visual regard on an object appearing within the visual field, and the other by which the visual regard pursues the object if moving—a primitive protective mechanism. Gwynne Maitland has demonstrated experimental nystagmus set up by prolonged activation of these reflexes, and has pointed out how closely linked is the response with the subject's emotional state. At all events the condition of the mine, with the impending falls of coal which account for approximately half the total accidents, must certainly awaken the workers' emotional state, and it might be expected that the low illumination and the constant sense of danger should bring about cases of physiological and psychological breakdown after operating for any number of years. This is my view of the disorder known as miners' nystagmus: that it is a breakdown of the man's ability to withstand the stresses of the mine.

The condition is typically associated with psychoneurosis, and many of the symptoms are characteristic. For example, diarrhoea and precipitate micturition occasioned by excitement; insomnia; bad dreams; nausea and even vomiting—usually noticed first thing in the morning, just like the nausea of pregnancy. Phobias of various kinds are often described. Of my cases, a consecutive series of 118 showed the following analysis:

Headache	116	Nausea and sickness ..	71
Giddiness	115	Diarrhoea	6
Disturbed sight	106	Precipitate micturition ..	6
Insomnia	87	Dreams	6

The physical signs are also characteristic—the tachycardia, sweating, marked tremor, twitching of facial muscles, and the general mental state. Men often show an appearance of "crystallized panic."

Functional and Economic Factors

Numerous references to the functional element in the disorder have been made from 1887 to the present time (Dickson, 1933), and it has become recognized that "the state known as miners' nystagmus may be a psychoneurosis arising independently of any disorder of the eye movements or of vision, while in other cases psychoneurotic symptoms arise from the disturbance of vision connected with nystagmus itself, just as in the psychoneuroses of warfare some old injury or organic affection often determines the locality of a hysterical paralysis or anaesthesia . . . psychical conflicts of various kinds, sexual disturbances, or domestic worries all (may) contribute to the final breakdown" (Nystagmus Committee Report).

My experience in North Wales endorses this view. It has been found extremely rare for a man to give up work on account of eye movements alone. A close scrutiny of the case almost invariably discloses some other aetiological factor, which has finally determined cessation of work. The condition appears to depend upon the equation of two factors: the degree of strain, and the man's ability to withstand such strain; and McCoull (1932) also has shown that the condition is much more likely to arise in men of impoverished mental equipment.

Strain of an economic nature frequently decides the balance of the equation. North Wales is a striking example of this. During the last decade the highest annual incidence in the whole coalfield was nearly four times more than the corresponding figures for the whole of Great Britain during the past twenty-six years. This high incidence in North Wales corresponded with a marked fall in the number of men employed, for trade was bad and many pits had to close.

While investigating the fifteen pits of North Wales I found that whenever large numbers of men were discharged there was at once a rush to be certified. In one case the average annual incidence for eight years was 0.37 per cent. of the men employed below ground, and never above 0.86 per cent., but during the year the pit closed the incidence jumped up to 2.59 per cent. In another pit the average rate for six years was 1.09 and never above 1.61 per cent., but during the last two years that the pit remained open, and while large numbers of men were being discharged, the rate jumped up to 6.72 per cent. Many of these men declared quite frankly that they *could* work if only they had the chance to do so, but, as they often added, "a man must live." Yet, having once been certified—the die having been cast—many of them proceeded to develop chronic neuroses with tremor, tachycardia, sweating, etc., and a depressed and melancholy state of mind.

Here, then, we see how an additional economic factor may operate and may create the appearance of an epidemic. The claiming of compensation became widely known and customary. It became "the thing to do." It was this which I believe accounted for that large prevalence in North Wales mentioned earlier.

Suggested Lines of Attack

With all these facts in mind I see the following lines of attack in the prevention of disability from the malady:

1. *Concerning the Panel Doctor.*—Treatment of concurrent ill-health, such as anaemia, cardiac disease, focal infection, etc.

2. *Concerning the Workman.*—Avoidance of alcoholism and excesses of all kinds.

3. *Concerning the "Compensation" Doctor.*—Discovery of any particular stress, such as distance from pit bottom, defective light, sense of danger, prevalence of noise, etc., any one of which may predominate in taxing the man's tolerance. An appropriate change of job, if recommended to and accepted by the employer, may prevent a man's failure.

4. *Concerning the Colliery Companies.*—Diminution of stress by improvement of illumination and ventilation; whitewashing and stone-dusting. Setting up of experimental zones in which speed of work is slowed down. Provision of light work for affected men. Re-employment of men suitably recovered. Recognition of the nature of the condition and sympathetic co-operation in re-educating men to tolerate the full stresses once more. Possibly some form of pension scheme devised to remove the incentive to retire "on compensation."

5. *Concerning the Medical Officers who have to Examine Applicants for Work at the Mines.*—Namely, refusal of those showing impoverished mentality, deafness, or any defect calculated to render the stresses of the mine more acutely felt.

6. *Concerning the Medical Referee.*—Stricter assessment of disability on the basis that the disorder is not of an organic character, that eye movement is not proof of disablement, and that tachycardia is not a bar to employment. The writer suggests that an attempt should be made to decide whether the determining stress arises from the mine work itself or from independent sources.

Summary

1. Prolonged work below ground may bring about oscillation of the eyes which does not necessarily cause disablement.

2. When disability does arise it is usually due to an associated psychoneurosis.

3. The prevention of this depends upon: (*a*) recognition of the foregoing facts; (*b*) the treatment of contributory disorders; (*c*) diminished stress in the mine; (*d*) the barring of unsuitable applicants; (*e*) improved economic conditions; (*f*) stricter assessment of disablement.

BIBLIOGRAPHY

Alabaster, E. B. (1933). *Trans. ophthal. Soc. U.K.*, **53**, 571.
Dickson, R. M. (1933). *J. Army med. Corps*, **60**, 454.
Graham (1934). *Trans. Inst. min. Engrs.*, **60**, 222.
Haldane, J. S. (1922a). Med. Res. Council Rep. No. 65 (First Rep. Miners' Nystagmus Cmtee.), p. 48.
—— (1922b). Ibid., p. 62.
—— (1931). *Trans. med.-leg. Soc.*, **24**, 170.
McCoull, G. (1932). *Newcastle med. J.*, **12**, 208.
Maitland, T. G. (1936). Paper to British Association, Blackpool.
Ohm, J. (1922). Med. Res. Council Rep. No. 65 (First Rep. Miners' Nystagmus Cmtee.), p. 47.
Pechdo (1893). *Bull. Mém. Soc. franç. Ophtal.*, **11**, 394.
Robson, F. (1923). *Proc. S. Wales Inst. Engrs.*, **39**, Nos. 2 and 4.
—— and Fergus, Freeland. Various writings.
Snell, S. (1907). Departmental Enquiry into Industrial Diseases.
Wiedersheim, O. (1934). *Klin. Wschr.*, **13**, 1335.
Zeiss, E. (1932). *Ber. Versammil. dtsch. ophthal. Ges.*, **49**, 389.
Calif. West. Med., **40**, 19.
J. industr. Engng. Chem., 1922, **14**, 229.
Med. Res. Council Rep. No. 65 (First Rep. Miners' Nystagmus Cmtee.), p. 11.

MANIPULATIVE TREATMENT OF INTESTINAL SPASM

BY

J. H. CYRIAX, M.B.

Spasm of the unstriated muscle of the alimentary tract is usually disregarded or considered impossible of treatment; not all patients with a mild or transient spasm of the intestine are troubled by it, but most of them have symptoms of some sort. Two types of spasm occur: sympatheticotonic, affecting the sphincters of the alimentary tract; and vagotonic, affecting the bowel itself. The resulting discomfort is due as much to an overstretching of that part of the intestine immediately proximal to the area of spasm as to increased tension in the individual spastic muscle fibres.

Sympatheticotonic Spasm

Sympatheticotonic spasm of the pylorus and the accompanying loss of tone in the gastric musculature cause dilatation and consequently slow emptying of the stomach. The stomach also contains too much air, so that pressure is exerted upwards on the heart and the base of the left lung, and downwards on the pelvic viscera. The analogy is clear regarding spasm of the cardia with dilatation of the oesophagus and spasm of the recto-colic sphincter with megacolon, both of which conditions are relieved by section of their sympathetic supply and aggravated by division of the vagal supply—that is, their sympatheticotonic nature is well established. As the masseur's finger cannot reach these sphincters, however, they are outside the scope of this article.

The symptoms of the syndrome of pyloric spasm vary widely in intensity; patients may be bedridden or only slightly inconvenienced. They complain of tenseness and protrusion of the abdomen, much gastric flatulence, inability to eat much or breathe deeply, nausea, heartburn (caused, in my opinion, by a normal, or even subnormal, strength of acid being retained in the stomach too long), epigastric discomfort after food, palpitation, giddiness, breathlessness on exertion, insomnia, sweating hands, and often constipation. Though the appetite, which is a function of the blood-sugar level, may be good, patients feel too full to eat more after only a few mouthfuls.

Gastritis and gastric ulcer are often associated with pyloric spasm; this, I think, is primary, and the retention of acid the first step towards gastritis and its sequels. Flatulence is the result of gastric contractions against a closed pylorus; as liquid does not leave at the pylorus, gas is forced past the cardiac sphincter. If the cardia is as spastic as the pylorus, however, the patient, try as he may, cannot bring up wind, though he knows the relief that would follow. Breathlessness, giddiness, and palpitation after meals or on exertion result, and are due to upward pressure embarrassing the action of the heart.

The signs of sympatheticotonic spasm are often slight in comparison with the disability present. The patient is usually pale and thin, and looks anxious. The epigastrium and left lower ribs are prominent; there is epigastric tenderness, and the spastic pylorus can be rolled under the fingers against the spine. Gastric splashing may be detected, and there is a tympanic note on percussion over a large area; the bowel sounds are infrequent and the pulse fast. Radiological examination shows delayed emptying and poor tone of the stomach, often with visceroptosis, but nothing else.

Vagotonic Spasm

Vagotonic spasm may occur at any point from the duodenum to the rectum, where it is manifested by tenesmus. The common site is the colon ("colitis"), but the whole intestine, large and small, may be involved, or the spasm may be limited to only a few inches of bowel. The symptoms depend on the site and degree of the spasm, and the patients often feel surprisingly ill. Spasm of the distal part of the duodenum reproduces exactly the symptoms of duodenal ulcer, owing to the tension set up in the proximal segment. Spasm of the colon, if mild, causes colic and diarrhoea; if severe, colic and constipation, together with a feeling of tension within the abdomen. Spasm of the ascending colon is usually associated with dilatation of the caecum, and there is stiffness on full extension of the right thigh. Purges, by stimulating the colon to further contraction, make the constipation worse. If the rectum is involved there is difficulty and pain on defaecation. During menstruation, which is painful, vagal tone is generally increased and the abdominal symptoms are at their worst. Owing to its tight contraction a mechanical irritation of the mucous membrane of the colon is set up; mucus is secreted and voided, but apart from worrying the patient this fact is unimportant. Spasm of the jejunum and ileum is uncommon except as an extension of duodenal or colonic spasm, the symptoms of which predominate.

When the whole colon is involved the signs are obvious. The ascending and descending colon is palpable in each iliac fossa as a tender tube, the size of a thick pencil. The transverse colon lies high, and can be felt above the umbilicus on either side of the rectus muscle. The bowel sounds are frequent, the pulse usually slow. When the duodenum is spastic palpation may be difficult, but a skiagram will show the spasm and/or duodenal ileus—that is, dilatation and poor tone of that part of the duodenum proximal to the spastic area. Colonic spasm can be seen very clearly radiographically, and often a mild symptomless diverticulosis as well; this is the result of the high intracolonic pressure. Vagal tone is unaffected, but sympathetic tone is abolished, by spinal anaesthesia; at laparotomy the spastic coils that result are regularly observed. Spasm of the intestine, on the other hand, is relaxed by deep anaesthesia with ether or chloroform, so that surgeons are often sceptical of the frequency of its occurrence.

The cause of spasm of either type may be difficult to determine; in some cases no cause whatever is to be discovered. The two brief lists which follow include the more common causes, but are not exhaustive.

Causes of Sympatheticotonic Spasm

Toxaemia.—In the course of many diseases, particularly phthisis and febrile conditions, sympatheticotonic spasm is common, but its treatment is naturally that of the causative illness.

Reflex Spasm.—Cholelithiasis and chronic appendicitis—the latter often diagnosed but seldom present—both set up reflex pyloric spasm and its attendant symptoms, but are suitable for surgical rather than manipulative treatment. There is much discussion as to the true nature of "catarrhal" jaundice, but whether the abdominal symptoms are reflex, due to a duodenitis, due to spasm of the sphincter of Oddi, or part of an infective hepatitis, the fact remains that they are very amenable to manipulative treatment, which ensures proper relaxation of the pylorus and duodenum.

Pregnancy.—Early in pregnancy vomiting due to pyloric spasticity is common and responds well to manual treatment.

After Anaesthesia.—Particularly after laparotomy under a general anaesthetic pyloric spasm and gross dilatation of the stomach may result and cause persistent vomiting and pain due to tension on the wound. If a patient already the subject of spasm of the pylorus is subjected to an abdominal operation it is important that he should receive manipulative treatment from the first, especially if a spinal anaesthetic is not given.

Psychogenic Spasm.—It is essential to realize that in this large group of patients the symptoms are by no means imaginary. Their sensations correspond to definite visceral disturbances caused by impulses carried in the sympathetic system as the result of emotional stress, usually anxiety, prolonged dissatisfaction, or over-tiredness. That this sympathetic mechanism will be called into play is particularly likely in sensitive and intelligent people who feel deeply but are too controlled to give their emotions free play; hence these are repressed into seeking a visceral outlet. Emotion in mammals other than man leads to combat or flight, the preparation for which is brought about by a high sympathetic tone that results in, among other things, cessation of gastro-intestinal activity. In man, unfortunately, this preparation for violent action is seldom useful, as the emotion is more often intellectual and lasting than physical and momentary. Even an improvement in the patient's circumstances does not necessarily result in the cure of spasm of psychogenic origin, because the derangement of visceral movement may have become a deeply ingrained habit. The good results claimed for such apparently different methods of treatment as psychotherapy and sympathectomy in, for example, achalasia of the cardia are seen to involve no contradiction; both result in an inhibition of sympathetic impulses to the sphincter. The method of re-education of the intestine described below offers a third approach to the problem; if the spastic point can be reached by the masseur's finger, relaxation can be obtained in spite of the continuance of an excessive sympathetic tone.

Causes of Vagotonic Spasm

Mechanical Irritation.—A high-roughage diet or the liquids used in colonic irrigation may set up colonic spasm. Purges irritate the intestine, and since constipation is common are often persevered with, in spite of their failure to help. Occasionally diseases of the colon, such as dysentery, may after cure leave a colon liable to spasm.

Pregnancy.—Especially during the second half of pregnancy spasm of the colon is apt to occur. Many cases of hyperemesis gravidarum fall under this heading. In one patient a spastic loop had even forced its way between the uterus and the anterior abdominal wall, whence repeated reposition was necessary.

Allergy.—Attacks of violent diarrhoea followed by colic and constipation, with even prostration and syncope, occur in those sensitive to certain foods. The treatment is, of course, identification of the food responsible and its avoidance.

Hypocalcaemia.—This promotes a high vagal tone as well as increasing the excitability of the intestinal muscle. I have come across the condition only twice. The patients had blood calcium levels of 7.0 and 8.9 mg. per 100 c.cm. of blood respectively, with inorganic phosphorus blood levels of 5.3 and 3.2 mg. Injections of vitamin D raised the calcium figure to 12.3 and 12.2 mg., while that for phosphorus fell to 2.7 and 2.9 mg. In spite of this satisfactory change there was only improvement and no cure of the intestinal condition in each patient. Manipulative treatment afforded one of them great relief, but it has to be continued at fortnightly intervals; the other patient obtained full relief that has now lasted for six months.

Psychogenic Spasm.—Whereas anxiety tends to increase sympathetic tone, prolonged mild excitement stimulates the vagus. A large group of patients whose vagotonic spasm originates in this way includes those in executive positions with important decisions to make, engaged couples, and creative artists, all of whose preoccupations are to some extent pleasurable. Obviously, some problems will cause excitement in one person and anxiety in another.

Differential Diagnosis

By the time patients are prepared to try manipulative abdominal treatment they have usually been exhaustively investigated already. The length of history as a rule excludes a diagnosis of growth or early phthisis. There may be persistent discomfort and tenderness in the right hypochondrium, with flatulent indigestion suggesting cholelithiasis, and yet a normal radiological filling and emptying of the gall-bladder. In these cases spasm of the duodenum or of the colon near the hepatic flexure may be responsible. Spasm of the ascending colon is so often diagnosed as inflammation of the appendix that this has usually been removed. Appendicectomy, followed by a return of symptoms, possibly attributed to adhesions, suggests that the condition was ascending colonic spasm from the first. As appendicitis is accompanied by diminution of bowel movement in its neighbourhood, and spasm by excessive movement, auscultation for bowel sounds often points towards the correct diagnosis. There is, of course, no rise of temperature or pulse rate in spasm of the colon, but there may be constipation, and tenderness in the right—and often also the left—iliac fossa. Peptic ulcer is excluded by radiography in cases of pyloric or duodenal spasm, but, as an adjuvant measure, manipulative methods are not necessarily contraindicated in gastric ulcer, which can only benefit from relaxation of the pylorus. Achlorhydric diarrhoea and lead poisoning must be kept in mind. Heart disease is often suspected in the syndrome of pyloric spasm, and some cases of "effort syndrome" fall into this category. In constipation due to otherwise symptomless hypothyroidism, the lack of spasm, the slow pulse, and the silence on auscultation for bowel sounds give the clue to the correct diagnosis.

General Treatment

Whatever treatment is adopted it is essential to explain to the patient the way in which his symptoms arise. The idea that some part of the intestine, palpable by the physician and identified to the patient by the tenderness elicited, suffers a persistent contraction is well within the patient's grasp. Mistaken ideas to which the patient adheres firmly must be disposed of. They are: first, that his troubles are due to some unidentified foodstuff disagreeing with him; second, that for good health the bowels must be made to open at least once a day. A brief review of the ups and downs reported in the history quickly corrects the first fallacy, and the patient can be told that within reason it does not matter how seldom his bowels open so long as he does not take a purge. Manipulative treatment usually does result in a daily motion, but patients with severe colonic spasm often feel at their best when the bowels open only every other day.

The patients I see are those whom medicines and diets have failed to benefit, so that my opinions on the following points may be biased. Patients with a resting pulse rate of under 60, excessive salivation, and intestinal spasm are often helped by atropine, but colonic spasm alone appears not to benefit. To give atropine for pyloric spasm is illogical and useless; for this the correct drug theoretically is ergotoxine (not ergometrine), but I have not found any good effect follow its administration. My experience of papaverine has been disappointing; alkalis and bromides have, of course, already been given to most of these patients. For vaccines I can see no justification, and I have never tried Irish moss or bran. Calcium, by diminishing cellular excitability and increasing sympathetic tone, is a useful drug in vagotonia; its opposite, potassium, which

should in theory be useful for sympatheticotonia, I have not tried. Because of the patient's insistence that his present food disagrees with him, various diets will usually have been tried, and it is well to outline one consisting of foods that provide much nourishment in little bulk. Lying on the right side after meals and belts to raise the abdominal contents are not much use because it is not the position of the hollow viscera that matters but their tone.

Manipulative Treatment

Manipulative treatment is not the treatment of choice, as it requires daily attendance for perhaps some weeks, but it is the only treatment left untried by most of my patients. The fact that the patient has already had massage to the abdomen without relief is no bar to the method described below, which differs fundamentally from that used by masseurs. They are taught to massage the anterior abdominal wall and to try to push onwards the contents of the bowel, whereas the aim of the treatment outlined here is to relax the intestinal spasm so that no obstacle remains to hinder passage along the bowel. Before treatment begins all medicines must be stopped. If the patient has taken a purge regularly this may—but surprisingly often does not—result in the bowels not being opened for three or four days, but, after this, evacuation gradually becomes regular. The patient can be told that constipation is perfectly harmless so long as no attempt is made to treat it. In any case he is encouraged not to give in by the fact that the expected results of constipation —for example, headache and malaise—seldom appear under daily treatment.

The basic principle of all deep massage is not to allow movement between the patient's skin and the masseur's finger. Nowhere is this principle better illustrated than in massage of the intestine through the whole thickness of the anterior abdominal wall. The masseur's finger and the abdominal parietes must move as one, so that the intestine is directly affected. The patient adopts a half-lying position, relaxes his abdominal wall as best he can, and the spastic parts are identified. To begin with, the utmost gentleness may be necessary, since as soon as pain is evoked the muscles tense and treatment becomes impossible. With the hand and forearm horizontal, vibrations are transmitted to the intestine with the pads of the fingers. In patients who do well quickly the spasm may be felt and heard to relax after, say, fifteen minutes' vibratory treatment: in obstinate cases this desirable result may be achieved only after several weeks. From day to day the spastic point becomes less easy to palpate. Towards the end of the half-hour treatment, when the pylorus is relaxing, the stomach must be squeezed, so as to encourage its overstretched musculature to contract and expel some of its contents. The masseur stands facing the patient's feet, and bends forwards with the left hand on the patient's left lower ribs and the right indenting the mid-abdomen. The stomach is compressed between the masseur's two hands moving synchronously, the left hand medially, the right hand upwards. (In gastric ulcer, of course, this part of the treatment is omitted.) In spasm of the colon the same attempt is made in the right iliac fossa to diminish the size of the caecum. Finally, spinal nerve frictions are given; in sympatheticotonic spasm, only to the sacrum where they cause reflex excitation of the sacral parasympathetic nerves; in vagotonic spasm in the mid-thoracic to mid-lumbar region, to stimulate the sympathetic.

If the perineum is lax active exercise of the levator ani muscle can restore its tone, even years after childbirth. In "catarrhal" jaundice the treatment is the same as for a spastic pylorus, except that the duodenum must also receive treatment; the abdominal symptoms are usually fully relieved and the duration of pale stools reduced to a few days. The resting pulse rate gives a good indication of the patient's progress in cases of dilatation of the stomach; the rate falls from over 80 to under 70 when taken under standard conditions. A small increase in weight is common on improvement from sympatheticotonia. The patients are treated daily until they are much better, whereupon the interval between treatments is increased. When the patient remains well on a weekly treatment he can be discharged. Relapses are rare, and one or two prompt visits suffice to stop them. Dysmenorrhoea is often greatly benefited for no very obvious reason. Patients whom years of ill-health have dispirited must be encouraged to take up curtailed activities again, so that they are leading approximately normal lives by the time that treatment ceases. Of the last fifty patients treated by me forty-three have remained well for a year or more after discharge.

Conclusion

Great improvement, even cure, of long-standing abdominal trouble can be achieved by manual treatment to the gastro-intestinal tract; vibrations to relax the spasm, manipulation to contract the proximal viscus, and the appropriate spinal nerve frictions. Fortunately, gut that has been educated to ignore the impulses that are upsetting its function stays unresponsive; hence relief is usually permanent. The treatment, as outlined here, is expressed in its simplest terms, and experience suggests many variations in technique, but the fundamental fact that manual vibrations relax intestinal spasm does not alter. Daily practice for months is necessary for proficiency, but even when given imperfectly the treatment achieves its effect, albeit more slowly. There must be a large group of patients who would benefit from manipulative treatment of their gastro-intestinal tract, but whose medical advisers are but dimly aware of this method's possibilities, even existence. Nevertheless, there is nothing unreasonable about it, and now that surgical manipulation is so well established it is to be hoped that the profession will not arbitrarily reject the idea of medical manipulation.

G. B. Costa-Starico and M. Miglietta (*Arch. ital. Chir.*, 1937, **47**, 3, 281 state that the beneficial effect of maggots on suppurating wounds was observed by Ambroise Paré during the war in Flanders in the sixteenth century, and later by Larrey in the Napoleonic campaign in Syria. The American surgeon W. S. Baer, however, (*J. Bone Jt. Surg.*, July, 1931) was the first to mawe scientific use of the method of applying blowfly larvae in chronic osteomyelitis, having noticed in the great war that neglected wounds swarming with larvae healed with surprising rapidity. He therefore applied the larvae in eighty-nine cases of chronic osteomyelitis with gratifying results, which were confirmed by subsequent observers, including the present writers, who record six illustrative cases in patients aged from 4 to 29, and come to the following conclusions. The larvae of flies constitute a valuable addition to the surgical treatment of chronic osteomyelitis. In dissolving the necrotic tissue by their ferments and absorbing it the larvae facilitate the discharge of small sequestra embedded in unhealthy granulation tissue. The method moreover cleans up the wound and accelerates the process of recovery, this action probably being due to mechanical irritation. Lastly, it favours the production of a good smooth and solid cicatrix which does not contract or interfere with proper functioning of the limb.

CHRONIC LITTRITIS

BY

R. C. WEBSTER, B.Sc., M.D.

Assistant Venereal Diseases Officer, Salford

Chronic inflammation of the glands of Littré is one of the common sequelae of acute gonorrhoea. It is of considerable importance not only to the individual affected but also to the community, since it may cause the infective state to persist or may provoke a non-specific leucorrhoea in the patient's sexual partner. It is largely, if not indeed entirely, due to improper treatment and is therefore preventable.

Signs and Symptoms

Urethral discharge, which is commonly slight in amount but may be profuse for longer or shorter periods, especially in neurotic patients, is usually most marked in the morning before micturating; its appearance is often intermittent. Microscopical examination shows tangled threads of mucus, epithelial cells, a few pus cells, and some bacteria; the urinary threads show similar appearances. Pus cells of polymorphonuclear type are not numerous, but may be more abundant during exacerbations. The bacteria are scanty as a rule; various types of cocci are seen, a few bacilli, and occasionally some coarsely spiral organisms; gonococci are not often found, but may be seen after certain provocative stimuli, such as coitus, the taking of alcohol, or the intracutaneous injection of aolan and similar products, or of gonococcal vaccine.

In a two-glass test urinary threads may be most numerous in, or even entirely confined to, the first glass. The most characteristic type is a very fine comma-shaped or "exclamation mark" thread. Ill-defined sensations of "burning" or "tingling" are reported by many patients; the sensations are localized in the penis, and are of course most marked in neurotic types. The complement-fixation test may confirm the diagnosis, but cannot exclude it. Enlarged follicles may be felt on palpation of the urethra over a straight sound, or seen with the urethroscope. They appear as small purplish-red points, which may be slightly raised or depressed. Sometimes a rather larger pit with thickened margins is seen at the site of an old follicular abscess. The most characteristic appearance, which is seen in well-marked cases, is that of a double row of enlarged follicles opening into the crypts in the roof of the urethra. Hyperaemic areas, with superficial erosion of the mucosa, may be seen in some cases.

Aetiology

The essential factor in causation appears to be improper treatment—that is, treatment in which the urethra is exposed to fluids at high pressure. Urethral irrigations may be given by means of a douche acting by hydrostatic pressure or by means of a hand syringe. The hand syringe was formerly widely used in the treatment of gonorrhoea, and although it has now been largely superseded by douches its use still survives, in particular with those patients who attempt self-treatment, but also with those practitioners who are only occasionally called upon to treat gonorrhoea, and who lack the more cumbersome apparatus—and have not a proper understanding of the very real dangers of the syringe.

The patient using a hand syringe can readily produce very high intra-urethral pressure; since the pressure depends on muscular action it is variable within wide limits, and no objective measurement is possible. The pressure in the canal varies with that in the syringe inversely as the cross-section of the canal and of the piston of the syringe, and is of course a high multiple of that applied. The capacity of the ordinary syringe is relatively small, so that the urethra is washed with small quantities of fluid at a time. The use of the syringe is so often associated with attempts at self-treatment, or with treatment by those who are unfamiliar with venereal diseases, that it is not surprising that such patients often have not had routine blood tests for occult syphilis, or satisfactory, or indeed any, tests for cure of gonorrhoea. Although clinical and serological findings show that syphilis is not a factor in the causation of chronic littritis, the two conditions are of course not mutually exclusive. Patients frequently maintain their misguided efforts with a hand syringe for extravagantly long periods; a history of daily syringing for over a year is not unusual. In many cases from six weeks' to three months' use of the hand syringe is sufficient to produce chronic littritis. The same may be said of the use of strong or unusual solutions—for example, strong permanganate solutions, hair lotions, mouth-washes, olive oil—but the lesion can be produced by the syringe alone without these additional errors.

Comparison of Cases

In a large series of urethroscopies, such as are perfomed at the Salford Clinic in the tests for cure in all cases of urethritis, there is a striking contrast between those patients who have irrigated correctly and those who have used a hand syringe; on the one hand a monotonous series of normal urethrae, on the other a large number of cases of chronic littritis. The patient may complain of vague discomfort referred to the urethra, he may have a slight discharge occasionally on rising in the morning, and the urine may show small threads. He often stoutly denies that he has ever had urethritis or used a hand syringe for the prophylaxis of venereal diseases. When one has seen with the urethroscope that he certainly has a chronic littritis, the confident assertion that he has used a syringe or a sudden question which takes him off his guard will usually cause him to admit the correctness of the deduction. It must again be emphasized that these patients are liable to exacerbations following coitus even with a healthy female; the damaged mucosa also seems readily to acquire non-specific urethritis. Thus when first seen the patient may have a subacute urethritis which masks the underlying condition. The question of acute gonorrhoea is investigated in the usual manner, and he is then treated for his subacute urethritis; when this subsides the true state of affairs is discovered. The influence of excessive pressure in producing chronic littritis is also shown by the fact that one occasionally meets with it in those patients who have used an irrigator of the hydrostatic type but with the reservoir excessively elevated.

Treatment

The patient must abstain from alcohol, highly seasoned dishes, sexual relations, and sexual excitement. The urethra is gently irrigated with weak solutions; the words "gently" and "weak" must be emphasized. A solution of 1 in 10,000 mercury oxycyanide or 1 in 10,000 chloramine-T may be used. The anterior urethra is then massaged, at first lightly, later with increasing firmness though never roughly, over a straight sound. Treatment twice in each week is directed not at forcible eradication of the disease but rather at gentle stimulation of the mucosa. It is to be remembered that the lesion is

structural, and that in a large majority of the cases there is no evidence of an actual persistence of gonococci. The use of strong antiseptics is irrational, and serves only to increase the mischief by further injuring the mucous membrane. The use of local heating by means of hollow bougies heated by a stream of warm water or by diathermy is unlikely to be of great value. In very resistant cases cautious dilatation with the straight Kollmann dilator may be tried occasionally, but no very striking results are obtained, and in careless or unskilled hands the instrument is a dangerous one. Vaccines or non-specific protein therapy may be given. The action of the vaccines is probably non-specific also, since serological and bacteriological findings suggest that actual gonococcal infection is usually no longer present.

The most satisfactory results are obtained by patient urethral massage over a prolonged period. Massage should not be applied if the urine is hazy. This shows that there is a subacute urethritis or a cystitis present; these may be differentiated by the usual methods. Daily irrigation for a week or two with the solutions already mentioned and the administration of an alkaline diuretic mixture, which may contain 7½ minims of tincture of belladonna or one-half drachm of tincture of hyoscyamus to the dose, will usually clear up this difficulty. In a resistant case the mandelic acid treatment may be tried.

Tests of Cure

A common early effect of treatment is to increase the amount of discharge and the amount of pus contained in it. This need cause no alarm; it indicates that the follicles are being emptied and shows that the mucous membrane is reacting to treatment. Large palpable follicles become smaller, as may be observed with the urethroscope. If not already negative the complement-fixation test becomes weaker and ultimately negative. A case may be considered cured when an absence of the objective signs has been maintained for several months after the treatment has been suspended. Attempts should be made to provoke a return of symptoms by the intracutaneous injection of provocative agents—for example, 200 millions of a mixed vaccine of gonococci, staphylococci, *B. coli*, and streptococci, or of 1 c.cm. of aolan. It is not always possible in severe and long-standing cases to restore a completely normal urethroscopic picture, and in such cases relapses are to be expected, as the resistance of the mucous membrane is presumably lowered. It must also be remembered that some of these patients also suffer from a chronic "gonophobia," and may continue to complain of vague subjective discomfort. They return again and again to ask if they are "all right," they ask to have their cerebrospinal fluid tested, and ascribe herpes genitalis and many other things to their former indiscretions. Once one is reasonably satisfied that the organic basis of their symptoms is removed they are to be firmly reassured and if necessary referred for psychotherapy.

The complement-fixation test is not, as has been already stated, of much help in the diagnosis of this condition; it has complicated the question of cure in this as in other chronic sequelae of acute gonorrhoea. One sometimes finds that although all the other signs have cleared up in a certain case there still remains a greater or less degree of complement fixation. It is difficult to know what to do in such cases. Sometimes a negative test can be obtained after the patient has been given prostatic massage twice weekly in addition to his urethral massage for six or eight weeks, but whether this is *post hoc* or *propter hoc* is another question. One feels uneasy at telling a patient who still does not give a clear negative test that he is cured, and, on the other hand, one hesitates to prolong treatment unnecessarily, particularly as this may have serious effects on the patient's mental state and may also lead to marital discord. The problem appears to have no completely satisfactory solution in the present state of our knowledge.

I wish to express my thanks to Dr. A. O. Ross, senior venereal diseases officer at Liverpool, who first drew my attention to this condition and to the part played by the hand syringe in its production; and also to Dr. Marinkovitch, venereal diseases officer for Salford, for his encouragement and for permission to publish this paper.

Clinical Memoranda

"Sympathetic Twins"

The element of pure coincidence or obscure aetiological association makes these cases worthy of record. The history involves X. and Y., male twins aged 41, both unmarried, and living together in one household.

On December 10, 1937, Y., a stout man of robust appearance, was sent into the Royal Victoria Hospital, Belfast, by me with a diagnosis of gastric or duodenal ulcer perforation. Laparotomy revealed a perforation of an apparently chronic ulcer situated at the junction of the first and second parts of the duodenum.

On the following day X., a thin under-developed man of haggard appearance, complained of epigastric pain and had a small haematemesis and melaena. Forty-eight hours later he presented signs of an acute abdomen. He was admitted to the same hospital, and laparotomy revealed a perforation of an apparently chronic ulcer at the junction of the first and second parts of the duodenum.

Both these men have been known to me for several years, and although they consulted me on occasions with vague dyspepsia neither had at any time signs or symptoms suggestive of duodenal ulcer. The existence of a duodenal diathesis is commonly seen in practice, and the tendency in this family is heightened by the brothers living together and being presumably subjected to similar gastronomic indiscretions.

I am assuming that my patients are dizygotic (dissimilar, fraternal) twins. I base this on the fact of their entirely dissimilar appearance and general build, the verified history that they never resembled each other at any period of their lives, and, finally, their complete dispositional and temperamental dissimilarity. Newman (1917) points out the difficulty of differentiating the type of twins in adult life and discusses Wilder's method of comparing friction—skin, palm, and sole patterns. In monozygotic or identical twins these show a pronounced similarity which does not exist in dizygotics. This is an elaboration of the methods used in criminology.

The coincidental occurrence of diseases in twins is but seldom reported in our literature, though it must be relatively frequent. Watson (1934), reporting the occurrence of diabetes mellitus in twins, refers to the fact that in recent literature the total number of recorded incidences of this association is twenty cases. He points out that practically all diabetic twins are of the monozygotic variety, and he discusses hereditary predisposition as an aetiological factor. Militzer (1935) reports gastric

carcinomata occurring simultaneously and symmetrically in monozygotic twins, and states his inability to find a similar case recorded.

SUMMARY

Similar, symmetrical, and simultaneous duodenal ulcers occurring in dizygotic male twins are reported.

The ulcers in each case were apparently of some chronicity and clinically of the silent type.

These chronic ulcers perforated in each case within a matter of hours.

These cases tend to support the theory of a diathesis and a close hereditary association in the aetiology of duodenal ulceration.

The coincidental perforations could be attributed in some measure to the sympathetic and psychic affinities said to exist in twins.

CECIL W. KIDD, M.D.,
Royal Victoria Hospital, Belfast. Medical Registrar.

REFERENCES

Militzer, R. E. (1935). *Amer. J. Cancer*, **25**, 544.
Newman, H. H. (1917). *Biology of Twins*, p. 156. University of Chicago Press, Chicago.
Watson, E. M. (1934). *Canad. med. Ass. J.*, **31**, 61.

A Personal Account of the After-effects of the Modern Treatment of Carcinoma

I doubt if the results of the modern treatment of malignant disease by the combined methods of *x* rays, radium, and the surgeon's knife are as well known as they should be. The history of my own case, told partly as a patient and partly as a surgeon, may be of interest. In February, 1937, I found that I had an epithelioma, about the size of the nail of my little finger, on the left tonsillar lingual fold. It was freely movable on the deep tissues and there were no enlarged lymphatic glands. I was wintering in Jamaica. I left for New York at once, and placed myself under the care of a surgeon who has certainly had as much experience with this class of case as anyone in the world. More kindly, skilful, and generous treatment no one could possibly have received. The diagnosis was confirmed by a microscopical examination of the edge of the ulcer.

RADIOLOGICAL REPORT

Treatment began the day I arrived—that is, on February 22. From that date until March 12 I received *x*-ray treatment, amounting to a total of 3,540 *r* units, given during fourteen exposures. This was supplemented by radium therapy, ten radon seeds being inserted in the left anterior tonsillar pillar on March 8 and fifteen seeds in the left neck on April 1.

March 8.—First lot of ten radon seeds inserted around ulcer from inside of mouth.

April 1.—Under novocain. The left intercarotid lymphatic gland and the next gland to it were excised and the second lot of fifteen radon seeds inserted through the wound deep to the ulcer. The pathologist's report: "No growth; inflammatory only."

April 6.—Stitches removed, wound healed by first intention.

April 21.—Sailed for England.

THE PATIENT'S POINT OF VIEW

February 22.—I am 6 ft. 1 in., weight 10½ st. without clothes, aged 70. Could play a daily round of eighteen holes at golf or drive a car all day without being tired.

February 26.—After the fourth exposure to *x* rays, for the first time did not feel quite so well.

March 1.—After the sixth exposure to *x* rays I felt very slack; no appetite; coppery taste in mouth.

March 8.—Insertion of radon seeds hurt a bit. The last one very painful—as bad as extraction of a molar tooth. Felt sick and faint; pain, numbness, and a tingling in front part of left side of tongue. Could not open my mouth wider than to just admit a finger.

March 12.—Last exposure to *x* rays. My skin over the left side of neck and jaw bronzed, hot, and sore. Throat at site of growth slight superficial ulceration, no hard edges.

All this time my throat and nose were daily sprayed thoroughly with mild antiseptics. This has continued until the present time.

March 19.—Everything seemed worse, and I felt rotten.

April 1.—No pain from operation or afterwards.

April 6.—All stitches out. Wound had absolutely healed by first intention. No pain about scar.

April 21.—Sailed for England. Not feeling too good. Weight 9 st.

I improved in general health, but was never free from marked discomfort in the left side of my throat and tongue. Weight 9 st. 3 lb. on *July 22*.

About this date severe pain started in all three divisions of the fifth nerve on the left side and pain and spasm in the left masseter and pterygoid muscles. Eating, drinking, smoking, and speaking all increased the pain, and became almost impossible. There was an ulcer with a wash-leather slough on it about the size of a penny piece where the original growth had been. Cachets of aspirin and codeine relieved the pain a bit. I could only sleep on my right side, and pressure on the right posterior thoracic nerve caused paralysis of the right serratus magnus and "wing" scapula—I still have it. I went steadily downhill. Life was most certainly not worth living. On *November 7* my weight was 8 st. About the middle of November things got a little better; there was less severe pain and more appetite, and since then, to February 4, 1938, my weight has increased to 8 st. 8 lb.

It is interesting but not amusing to watch one's heavily irradiated tissues, practically unchanging month after month, wondering whether they will recover or die, knowing that the only thing one can do is to keep the mouth clean and the general health and nutrition as good as possible. I have not been dressed or out of my house and garden for the last six months. I can only walk about two hundred yards, and am a bent and feeble old man. I suppose I shall ultimately get better; but one asks oneself, "Is it good enough?" For me, definitely not. The surgical part of my case was trivial and painless. I would not wish my worst enemy the prolonged hell I have been through with radium neuritis and myalgia for over six months. La Rochefoucauld was right when he said: "It is a grievous illness to preserve one's health by a regimen too strict."

This account of my own case is a plea for a very careful consideration of all the factors before deciding which is the most suitable method of treatment. For an old man with an early growth to have an adequate surgical operation only would be well worth the possible extra risk of recurrence. On the other hand, though a young man might withstand radium better, if he is unfit for work for a year afterwards how does he earn his daily bread? The resistance of tissues to radium emanations is still a doubtful quantity, and the intensive research on this subject which is being carried out should be generously supported. This to my mind is even more important than buying more radium and using it in cases for which it may not be the most suitable form of treatment.

PERCY FURNIVALL, F.R.C.S.,
Consulting Surgeon to the London Hospital.

Reviews

ALLERGIC MANIFESTATIONS

Clinical Allergy due to Foods, Inhalants, Contactants, Fungi Bacteria, and Other Causes. By Albert H. Rowe, M.S., M.D. (Pp. 812. 37s. 6d.) London: Baillière, Tindall and Cox. 1937.

In his book on clinical allergy Dr. A. H. Rowe emphasizes the importance of allergic manifestations in the patient's system, and points out that any tissue may become sensitized. As instanced, the gastro-intestinal, neurological, ophthalmological, and dermatological systems may be severally affected. Dr. Rowe is especially interested in food allergy, but recognizes other causes. He suggests that allergy is in the nature of a defensive mechanism and discusses the antigen-antibody reaction. The theory of this reaction is examined in full and the hereditary factor is adequately dealt with. He stresses the point that positive skin reactions are not necessarily obtained by the food to which the patient is sensitive, but that the causes of the condition may be ascertained by elimination diets, and gives a very useful table to show how this may be done. He emphasizes the importance of a carefully recorded history. The technique of skin testing is adequately discussed, including the Prausnitz-Küstner reaction.

Elimination diets are described in much detail, and will be found very useful when investigating a specific case of suspected allergy. It is, of course, difficult to draw up a diet sheet, and in this respect the tables will be helpful. Desensitization by giving gradually increasing quantities of the food to which the patient may be sensitive is discussed, as well as hypodermic desensitization. Dr. Rowe is of the opinion that the theory of achlorhydria as a cause of allergy is not founded on a firm basis.

A special section is devoted to pollen allergy and its treatment. There are also chapters on general treatment and a full description of the allergic dermatoses. Nasal, urogenital, and joint allergy are well described.

Perhaps the most interesting section is that on the subject with which the author is particularly concerned —namely, food and drug allergies—and the book will be found most useful in helping the practitioner to deal with a case of food allergy. There is an appendix containing illustrated case histories and many hints on the management and treatment of allergic patients.

The book is well written and well printed, and will be valued by those interested in the subject.

OPERATIVE DENTISTRY

A Text Book of Operative Dentistry. By William Harper Owen McGehee, D.D.S., M.D., F.A.C.D. (Pp. 922 : 1,040 figures. 42s.) Second edition, revised. London: J. and A. Churchill Ltd. 1937.

McGehee thinks the scope of operative dentistry should be limited to those affections of the oral cavity resulting from dental caries, erosion or abrasion, exposure or infection of the dental pulp and its sequelae, and to manifestations of pathological disturbances of the periodontal membrane resulting from pulp diseases. He excludes pyorrhoea, exodontia, anaesthesia, planting of teeth, the technique of radiology, orthodontia, minor oral surgery, dental anatomy, histology, and pathology as fields for the several specialists. He yet finds matter for a volume of 900 pages with over 1,000 illustrations. The chapters on prevention of oral diseases afford much interesting reading (especially we note the discussion of the value of dentifrices) and at the same time food for criticism. What value is there, for instance, in such a statement (p. 137) as, "The condition is due . . . in rickets, gout, diabetes to the fact that not only is the vital resistance of the teeth lowered, but that also in these conditions there is *supposedly* [our italics] an excess of ammonium chloride found in the blood which, reaching the vessels of the pulp, produces a dissolution or softening of the hard tissues of the teeth"? And how are we to reconcile the statement (p. 183) that monocalcium phosphate predominates in the saliva in caries susceptibility while tricalcium phosphate predominates in immunity with that on page 188 that the resting saliva is hyper-acid in all cases of immunity and hypo-acid in susceptibility? The chapters on gold amalgam and cement fillings and on gold and porcelain inlays and porcelain jacket-crowns are most practical, and include a new form of interstitial cavity preparation; while the discussion on root-filling is marked by sound common sense, though we have to confess that at the end we are left wondering whether any but the straightest and simplest root-canal can be successfully filled.

Perhaps it is a fault on the right side, but we think Dr. McGehee's book is overillustrated, and in some cases (for example, Fig. 12) the illustration does not show all the legend claims. The book is another evidence of the high ideals of American dentists.

CHRONAXIA

Interprétation du Fonctionnement du Système Nerveux par la Motion de Subordination: Subordination et Posture. By Pierre Mollaret. (Pp. 442. 60 fr.) Paris: Masson et Cie. 1937.

The French school of neurology has a great tradition to maintain, and recently its brilliant work on chronaxia has been entirely worthy of this tradition. Dr. Pierre Mollaret has undertaken a survey of this work and thereby advanced an interpretation of the function of the nervous system based on the concept of subordination.

The foundations of three great recent advances in the understanding of the function of the nervous system have been Cajal's demonstration that the nervous system presents a histological discontinuity; Sherrington's proof that in this discontinuity the transmission of the nervous impulse displays a choice at each synapse; and Lapicque's concept that the explanation of this "choice" lies not in spatial but in chronological data. The study of chronaxia has established certain laws. The chronaxia of any given muscle is fixed. Certain muscle groups show similar chronaxias, and these correspond to definite segments of the limbs. The chronaxias of the distal groups are longer than those of the proximal groups. The chronaxial classification of muscles thus obtained is not anatomical but functional. The chronaxias of agonist muscles are in a 2 to 1 or 1 to 2 proportion to those of the antagonists.

Testing chronaxia in the central nervous system it is found that it is the same throughout the neuronic chain from cortex to muscle provided this is healthy, but in illness this isochronaxia may be seriously upset. Similarly, on the sensory side there would seem to be a constancy of the chronaxia throughout the transmission path of a given sensation and simple relations between the chronaxia of different sensations. In reflex paths there would seem to be isochronaxia on both sensory and motor sides of the arc. Chronaxia in the vegetative system is being studied, but no definite conclusions have yet emerged.

The concept of subordination has been proved by many experiments on all sorts of animals, and is that the

chronaxia of the peripheral elements of the nervous system is controlled by, and therefore is subordinate to, that of the central elements in health, and that in disease this subordination is disturbed. A study of the chronaxia of the various parts will thus help to localize the lesion. Similarly, such studies throw light on the action of certain drugs, especially of anaesthetics, and on the effects of the toxins of various bacteria and viruses.

Much work has been done on the variations of chronaxias and their subordination at various levels of the nervous system under normal and pathological conditions, and on influences brought to bear by interaction of the central and the vegetative nervous system and by various circulatory nutritive and endocrine changes. Though many of these observations are confusing and contradictory, they seem to point to a physicochemical explanation of the phenomena and to throw light on the recent theories of chemical transmission of nervous impulses.

In the last section of the book Dr. Mollaret describes his own studies on chronaxia and subordination in relation to posture. As Dr. Lapicque says in the preface, this work is an invaluable survey of all that has been done in the field of chronaxia up to the present time.

TREATMENT OF PNEUMONIA

The Management of the Pneumonias. By Jesse G. M. Bullowa, B.A., M.D. (Pp. 508; 142 figures; appendix. 27s. 6d. net.) London, New York, Toronto: Oxford University Press. 1937.

Professor Bullowa's book, based largely on the studies carried on in the Littauer Pneumonia Research Laboratory and the wards of Harlem Hospital, New York, is a very detailed exposition of the subject. It is copiously illustrated by graphs, curves, and charts in the American manner. Unless it is borne in mind that this book is the result of a planned research the reader may feel overwhelmed with the mass of statistics and mathematical calculations, and he may despair of ever being able to treat a case of pneumonia again. But once the nature of the book is realized he will find much shrewd observation and helpful guidance. He may, however, feel that if we in this country tend to undertreat our cases, there may be a tendency to overtreatment on the other side of the Atlantic, and may demur from the statement (p. 38) that the pneumonia patient is never too ill to be examined.

From the wealth of material we may pick out some of the points that interested us. The author finds that women, though more lightly clad than men, are less liable to pneumonia, which emphasizes the protective value of a quickly reacting vasomotor system in the skin. He stresses the dangers of dehydration, and regards euphoria as a very bad sign. Horsfall and Goodner are quoted (p. 75) on the importance of certain lipoids in assisting and in interfering with the protective effect of serum treatment; lecithin assisting and cholesterol interfering with it. We are rather surprised to learn (p. 169) that the metabolic requirements of a pneumonia patient may be 3,500–4,500 calories daily, and that 7.2 per cent. should be added to this for every rise of a degree in temperature. For a fever of short duration we should not have thought inanition a real danger, nor should we have anticipated that such a patient could assimilate so much nourishment. The author is strongly opposed to morphine in pneumonia, mentioning (p. 180) that out of fourteen delirious patients given morphine thirteen died. He disbelieves in the value of quinine derivatives such as optochin, and mentions the risk of their causing amblyopia. As to prontosil, he does not think that its value for bacteriaemic cases of pneumonia is as yet proven.

There is an interesting section on acute pulmonary oedema (p. 188). Professor Bullowa considers that treatment should be directed to overcoming the increased capillary pressure by (1) reduction of the circulatory fluid by limiting fluid intake and by venous tourniquets; (2) abstraction of fluid from the tissue spaces by the intravenous injection of 100 c.cm. of 50 per cent. sucrose solution, which, though acting more slowly than glucose, has a more prolonged effect; (3) treatment of anoxia by oxygen administration and increasing the depth of respiration by giving it under pressure, which also breaks up the foam bubbles in the atria of the alveoli; (4) counter-irritation.

Good radiographs of the chest illustrate the section on radiological diagnosis; and methods of oxygen administration and of serum treatment are dealt with comprehensively. But enough has been said to show what a full study of the subject has been made by the author.

IRON METABOLISM

Das Serumeisen und die Eisenmangelkrankheit (Pathogenese. Symptomatologie und Therapie). By Ludwig Heilmeyer and Kurt Plötner. (Pp. 92; 22 figures. RM. 6.) Jena: G. Fischer. 1937.

In this monograph on serum iron and iron deficiency Drs. Heilmeyer and Plötner give a useful review of an important subject. The iron content of serum is only about 1 mg. per litre and hence the total body content is less than 4 mg. This tiny quantity is, however, important, because it represents material in transport, and after secondary anaemia due to haemorrhage it may fall to 20 per cent. of the normal. The authors calculate that in such conditions the serum iron is restored more slowly than the haemoglobin, and only returns to normal when the iron depots of the body are refilled. The monograph closes with an interesting discussion on the value of various forms of iron therapy. Measurement of changes in serum iron permit the demonstration within a few hours of the fact that ferrous salts of iron are absorbed, whilst ferric compounds are not. The authors draw attention to the great value of intravenous injections of the combination of iron and ascorbic acid. Injections of 0.2–0.3 gramme of this compound produce better effects on the haemoglobin content than does administration of 6–10 grammes of ferrum reductum by mouth.

The monograph gives a very clear account of an interesting new method in chemical pathology which should do much to clarify our knowledge of the difficult subject of iron metabolism.

"MUIR AND RITCHIE"

Muir and Ritchie's Manual of Bacteriology. Revised by Carl H. Browning, M.D., LL.D., D.P.H., F.R.S., and Thomas J. Mackie, M.D., D.P.H. Tenth edition. (Pp. 996; 212 figures, 6 coloured plates. 20s. net.) London: Humphrey Milford, Oxford University Press. 1937.

In spite of the appearance of new textbooks of bacteriology the manual of Muir and Ritchie continues to hold its position as one of the standard works in this field. The tenth edition, which has been revised by Professors Browning and Mackie, retains those features which have been distinctive in previous editions. The new illustrations conform to the high standard one expects from this textbook, and the treatment of the pathological aspect of the naturally occurring or experimentally produced infections, which has always been an attractive feature, has

not been sacrificed in spite of the extra space needed to bring the book up to date.

Recent advances in the field of bacteriology have called for extensive revision and rearrangement in many of the chapters, and much new material has been added, including descriptions of such organisms as those of bovine pleuro-pneumonia and agalactia, *Bacterium monocytogenes* and *Bacillus necrophorus*. The inclusion of pseudo-rabies, lymphocytic chorio-meningitis, rift valley fever, poradenitis, the common cold, and influenza has led to a considerable enlargement of the section dealing with filterable viruses. This opens with an introductory chapter in which the characteristics of viruses in general are discussed and the technique of virus work is described. The methods available for the staining of elementary bodies are so numerous that one would neither expect nor hope to find them all included in a book of this nature: the authors have confined themselves to a few methods which they know to be satisfactory and reliable. The directions for the cultivation of viruses are not always as clear as they might be; particularly is this so in the description of the method utilizing the chorio-allantoic membrane of the developing hen's egg. The chapters on the pathogenic protozoa and the pathogenic fungi have been retained, and a short appendix on the bacterial flora of the normal skin and mucous membranes has been added.

The extensive revision and additions throughout the text have inevitably led to an increase in size, and although it may appear to be rather large for the undergraduate medical student in view of the relatively short time allocated to the subject in the medical curriculum, the book in its new form can be recommended as a concise and up-to-date work on the subject.

Notes on Books

Die Operation in der Sprechstunde, by Dr. RICHARD GOLDHAHN (Leipzig: Georg Thieme, RM. 6.80), is an attractive little volume dealing with the type of surgery which a practitioner may be called upon to perform in his consulting room. It consists of some 180 pages of text, an index, and sixty-eight illustrations, which are very clearly drawn and demonstrate well the points made in the text. The treatment of wounds, tracheotomy, lumbar and cisternal puncture, teeth extraction, and tonsillectomy may be cited as examples of the surgical procedures, all of which are described concisely and clearly. Descriptions and illustrations of some useful devices not often referred to in students' textbooks are included, such as a method of extracting a pin from the urethra so as to produce minimal damage and the use of Michel clips for controlling bleeding from a scalp wound, while the accounts of the treatment of urinary obstruction, finger and hand infections, and of peri-anal abscesses add to the value of the book. The convenient size of this volume, its large and clear print on glossy paper and particularly graphic illustrations make it attractive, and it should have a wide appeal to practitioners and even also to hospital residents. It might profitably be translated into English.

The object of the *Municipal Year Book* is to give succinct information about the various developments of local government administration, first as a permanent record of events, and secondly in order to facilitate reference for everyday use by all who are concerned directly or indirectly with the civic services. The issue for 1938, the fortieth year of publication, is a large and well-produced volume of 1,650 pages, divided into fifty sections, with full general indexes and a handy thumb index to the twelve main divisions. The whole material has been thoroughly revised, and the editor says that fully 80 per cent. has been rewritten. The past year was a fruitful one in the matter of law cases affecting local government, and all the important cases and decisions are reviewed. The Minister of Health contributes a glowing preface to the latest edition of this invaluable encyclopaedia of local government facts and figures. It is published at 30s. by the Municipal Journal, Ltd., 3 and 4, Clement's Inn, Strand, London, W.C.2.

The third edition of *The Sanitary Inspector's Handbook*, by H. H. CLAY, has been enlarged by nearly 100 pages owing to the rewriting of most of the references to law throughout the book rendered necessary by the coming into operation of the Public Health Act of 1936, the provisions of which are specifically considered in certain chapters. Additional new technical information has also been incorporated, and the book deals effectively with the great diversity of duties now laid on the sanitary inspector. A summary of the law in Great Britain so far as it concerns the sanitary inspector is inserted at the beginning of each chapter, facilitating quick reference and ensuring lucidity. Nearly 100 illustrations in the form of diagrams add to the value of the book, and a glossary of building terms, memoranda, and an adequate index are supplied. The present edition is a worthy successor to its popular predecessors. It is published by H. K. Lewis and Co. at 16s. 6d.

An important addition has been made in the tenth edition of BOLLES LEE'S well-known handbook *The Microtomist's Vade-Mecum*, Dr. D. G. Catcheside having contributed a new section on plant technique. There are also new chapters on frozen section technique and vital staining. All the sections have been carefully revised and brought up to date. The original author, Arthur Bolles Lee, was at one time a medical student in London, but he did not complete the course, going out to Neuchâtel, where he devoted himself to the methods of microscopical anatomy. In the first editions of his *Vade-Mecum* no procedure was included which he had not personally employed, but the scope of the subject extended so widely that later on this selection became impossible; several chapters in this edition—for example, those on invertebrate embryology and nerve-endings—still stand as the original author left them at his death in 1928 when the ninth edition was just going to press. The present authors are J. Brontë Gatenby of Trinity College, Dublin, and Theophilus Painter of Texas University. The publishers are J. and A. Churchill and the price is 30s.

Preparations and Appliances

FERRAEMIA TABLETS

Ferraemia brand tablets (Messrs. Wilcox, Jozeau and Co., North Circular Road, N.W.2) are chocolate-coated tablets each of which contains 2½ grains of exsiccated ferrous sulphate together with small quantities of copper and manganese salts and 2 grains of dried yeast. The preparation is recommended for hypochromic, nutritional, and secondary anaemias, and as an adjuvant to liver therapy in pernicious anaemia.

MAGNESIUM TRISILICATE PREPARATION

"Trisomin" (Eli Lilly and Co.) is a preparation of magnesium trisilicate. Dr. Mutch drew attention in these columns to the useful antacid properties of this salt, which adsorbs and inactivates hydrochloric acid. The adsorbent action of the hydrated silicate gel formed in the gut by magnesium trisilicate indicates that it should be valuable in the treatment of diarrhoeas due either to food poisoning or to infection with dysenteric organisms.

UNDULANT FEVER IN MALTA

BY

J. E. H. GATT, M.D., D.P.H., D.T.M.

As a result of the report of a Royal Commission which investigated undulant fever in Malta in 1904 to 1906, both naval and military authorities forbade the use of fresh milk of any sort by the marine troops and their families. In a few months a morbidity from this cause as high as 37.6 per cent. among soldiers and 28.55 per cent. among sailors and their families disappeared altogether with the compulsory substitution of tinned for fresh milk. The occasional sporadic cases were invariably traced to the consumption of fresh milk in unauthorized inns or restaurants. Among the civil population the incidence of the disease increased till in 1934 as many as 7.25 per 1,000 of the population were infected. The public health department periodically advised that milk should be boiled, but owing to a prejudice against cooked milk, and the fear of adulteration unless the goat (the principal and often the only source) was milked on the doorstep of the householder, only a very small proportion of the inhabitants paid heed to the warning. Tinned milk, however, rose rapidly in favour among the lower classes as an infant food. Many cheap sweetened brands flooded the market, to the obvious detriment of child welfare and with a consequent increase in the infant mortality. Cases of undulant fever among the military and naval population dropped from 245 in 1905 to 12 in 1907. The figures for the civil population for the same years were 798 and 457 respectively. For the last decade, 1926 to 1935 inclusive, the returns for the civil population have been as follows:

Year	Cases Notified	Deaths
1926	586	27
1927	702	28
1928	971	42
1929	1,288	61
1930	1,471	85
1931	1,345	72
1932	1,465	82
1933	1,713	67
1934	1,909	88
1935	1,310	80
1936	873	52
1937 (January to October)	677	—

The highest incidence invariably occurred during the dry months of the year—that is, from May to September or October. Thus for 1937:

Months ..	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
Notified cases..	36	48	66	70	93	109	146	133	114	98

Epidemiology

Undulant fever is endemic throughout the Mediterranean basin and all the countries adjoining it. Since the identification of *Brucella abortus* in 1921 and the discovery of its close relationship to *Brucella melitensis*, it may well be described as a world-wide disease. In Great Britain the infection was first reported by Sir Weldon Dalrymple-Champneys in 1929. Other reports followed from Scotland, Wales, and Ireland; recently reports have come from Russia, the infection there being traced to dung briquettes imported as fuel. In France at least fifteen Departments, chiefly in the south and south-east, are seriously affected. In the United States of America thirty-two out of the forty-eight States are infected, and the infection is progressing. Infection has been invariably traced to raw milk or to direct contact with the discharges of infected animals.

Clinical Points

Undulant fever due to *Brucella melitensis* infection is characterized by waves of fever of varying duration with intervening periods of apyrexia, often of very long duration, the total course varying from an average of six months to three years or longer. There is profuse diaphoresis, progressive anaemia, and later excruciating pains in bones, joints, and along the course of nerves, due to chronic inflammation of aponeuroses, ligaments, and nerve sheaths. The spleen is always enlarged but not usually tender. Secondary infections, especially tuberculous and staphylococcal, are common. The most usual blood picture is a leucocytosis, as many as 50 per cent. of the white cells being mononuclears. A moderate eosinophilia may also be met with. In protracted cases the haemoglobin is considerably reduced, and a profound anaemia results which is the cause of a protracted convalescence. Blood culture is positive in as many as 98 per cent. of cases, and the *Brucella melitensis* may be isolated even during apyretic intervals. The not infrequent presence of organisms in the urine of patients at once raises the problem of human carriers.

Treatment and Prophylaxis

Vaccines appear to offer the only hope of successful treatment at present, but largely owing to the profound anaemia and allergic states great care and patience have to be exercised in the selection of cases suitable for vaccine therapy. Prontosil has been tried in America without success.

As to prophylaxis, the scheme in Malta for pasteurizing goats' milk and for the simultaneous control of the whole milk industry of the islands, which will result in the early disappearance of all goats and sheep from the public thoroughfares, is now well in hand, and it is hoped that the system will begin to operate early in 1938. But unless all the herds are systematically examined with a view to eliminating all infected beasts, which certainly exceed 15 per cent., the improvement must be slow. Undulant fever has been successfully stamped out in Port Said by destroying all infected goats; the same method of attack is being advocated and carried out in Sweden to deal with contagious abortion in cattle. If the destruction of a considerable proportion of the existing herds in the Maltese Islands is not feasible, at least immediate segregation should be insisted upon, and the goats so segregated on Government farms may supply the material for further study at the newly opened research station, where it is hoped to evolve a suitable goat vaccine. An emulsion of *Br. abortus* in normal saline (100,000,000 organisms per c.cm.) is used intradermally in France for the detection of infected animals, 0.7 c.cm. for cattle and 0.3 c.cm. for sheep and goats being injected into the folds of the skin around the anus. A positive reaction is indicated in from two to three days by a tense oedema which lasts for five to six days. A preventive vaccine with live, non-virulent organisms is also used for infected animals. This prevents abortion, and thus reduces the chances of human infection from this source.

While compulsory pasteurization is not at present contemplated in Malta, reliance is being placed more on the effect of healthy propaganda, with a view to educating the public to the value of a clean and safe milk. Distribution in properly sealed bottles and cartons will be from suitable centres, so that the supply will be within easy reach of the consumers all over the island.

A new edition of the pamphlet *Careers for Secondary School Girls* is now published in a more compact form as one of the series prepared by arrangement between the Incorporated Association of Headmasters and Headmistresses and the Ministry of Labour. Most of the usual careers for girls are listed, including some still in the pioneer stage. In each section there is a brief note of the qualifications required (with particular reference to the need for the school leaving certificate); the nature, length, and cost of training and the prospects, including starting salaries. The pamphlet is on sale at H.M. Stationery Office or through any bookseller, price 6d. (7d. post free).

BRITISH MEDICAL JOURNAL
LONDON
SATURDAY FEBRUARY 26 1938

THE TRANSPORT OF IRON

In a recent leading article in these columns[1] we discussed the problem of the storage of iron, and attention may now profitably be turned to the transport of iron, a subject on which important work has been carried out during the past year. Heilmeyer and Plötner[2] have studied the level of iron in the serum by a photometric method, using as indicator *o*-phenanthrolin, which has the advantages over dipyridyl that it gives a sharper reading, is cheaper, and keeps better. The values, which are very constant in health, are: for men 122–130 γ per cent. and for women 85–93 γ per cent.* Thus the serum iron in men and women differs by 30 per cent. and the difference is statistically significant. It cannot be explained on the ground that women are not so full-blooded as men, for their haemoglobin and red cells differ by only 10 to 15 per cent., and in general there is no very close correlation between serum iron and blood haemoglobin in healthy people. The difference is attributed to the effects of menstruation (all the women examined appear to have been in the reproductive epoch), for loss of blood usually depresses the level of iron in the serum. In pregnancy the serum iron varies over a very wide range, and no general statement can be made about it. The serum iron is low in idiopathic hypochromic anaemia and in chronic haemorrhagic anaemia. It may rise above the normal level for a short time after a small haemorrhage, but it falls after a large haemorrhage, even below 20 γ per cent. Such a fall is not seen when bleeding occurs in aplastic anaemia, and reasons are given for ascribing it to increased consumption of iron by the blood-forming organs, which manifest increased activity after acute loss of blood. The iron absorbed from the food or released from previous stores is insufficient to meet the needs of haemopoiesis, and the sharp fall in the level of the serum iron is the expression of a transient relative iron deficiency and an indication for prescribing it. The serum iron rises during iron therapy but does not regain the normal level until anaemia is repaired; it is normal or high normal in pernicious anaemia, it falls during liver treatment, and only returns to normal again when the anaemia is cured. Very high values are found in haemolytic anaemia. The serum iron is much decreased in infections, and this decrease persists so long as the infection is active. A parallel is drawn between this finding and the diminution of vitamin C in the body fluids in infections, and it is suggested that both are due to the heightened metabolism of fever and the greater need for the oxidizing-reducing properties of iron and vitamin C.

These observations have been confirmed in detail by Moore and co-workers.[3] They believe that the amount of iron present in the peripheral blood is influenced by the amount of iron being absorbed from the gastro-intestinal tract, the extent and adequacy of the iron reserves of the body, and the ability of the bone marrow to utilize iron in the manufacture of haemoglobin. It is also influenced by the rate of haemoglobin synthesis, the extent of haemolysis taking place in the spleen and other tissues, and the equilibrium which exists between these two processes. It would be a mistake, however, to assume that iron is carried only in the plasma, and such a conclusion is negatived by the studies of Josephs and Winocur.[4] They have been working with little children and have had to confine their studies to whole blood. The iron of whole blood (approximately 50 mg. per cent.) can be regarded as the same as the corpuscular iron, as the upper limit of the serum iron is only about 0.5 mg. per cent. Normally the total iron of the blood corresponds with that calculated from haemoglobin within a limit of ±6 mg. per cent. If whole blood or a solution of haemoglobin is treated with hydrochloric acid about 5 per cent. of the total iron present becomes ionized, so that it will pass through a semipermeable membrane. The proportion of "easily split-off" blood iron is relatively constant; it does, however, undergo variations, and these have no obvious relation to either the amount of iron in the plasma or the concentration of haemoglobin. It is suggested that haemoglobin may not be a uniform substance but may consist of two different haemochromogens which differ in respect of the firmness of their combination with iron, but the exact meaning of the easily split-off iron and its functions remain to be defined. All three groups of workers appear to agree on these two points: that normally the amount of iron in the corpuscles can be completely accounted for by their haemoglobin content; and that all samples of human haemoglobin probably contain the same percentage of iron, even though the amount of iron which can be easily split off by acid may vary under different physiological and pathological conditions. Josephs and Winocur compared the amount of iron in the blood of sick children with the amount

* The symbol gamma (γ) signifies 1/1,000 milligramme.

[1] *British Medical Journal*, 1937, **2**, 970.

[2] *Das Serumeisen und die Eisenmangelkrankheit*, 1937, Jena.

[3] *J. clin. Invest.*, 1937, **16**, 613 and 627.

[4] *Johns Hopk. Hosp. Bull.*, 1937, **61**, 75.

of haemoglobin determined by oxygen capacity and colorimetry, and they found that at certain times the corpuscles contain more iron than can be accounted for by their haemoglobin content. These times are the first two months of life; during iron therapy; and during infections. The extra iron in these conditions exists in a so-called organic form, and its significance is not clear. It may represent a more primitive form of haemoglobin having a higher content of iron than is normally present, or it may be an iron-containing organic compound which does not carry oxygen but is an intermediate product in the formation and breakdown of haemoglobin.

If the results of Josephs and Winocur are confirmed—and it is obviously desirable that they should be repeated on adults—we must conclude that iron is transported in a relatively simple form in the plasma and in organic form in the corpuscles. The two systems do not run parallel, for in infections the serum iron is low and the non-haemoglobin iron of the corpuscles is high. Further analysis may provide data which will lead to a better understanding of the closely linked processes of breakdown of blood and formation of blood, which maintain the concentration of haemoglobin in the blood with such constancy in health and which restore it to the normal level with such surety when it has been reduced by haemorrhage, malnutrition, or disease.

RISKS OF EXPLOSION IN ANAESTHESIA

A paper read on Thursday by Mr. E. H. Rayner, Sc.D., before the Institution of Electrical Engineers, on risks of explosion in anaesthesia, describes the results of the investigations carried out at the National Physical Laboratory on behalf of the Joint Anaesthetics Committee of the Medical Research Council and the Royal Society of Medicine, which were referred to in these columns last year.[1] Twenty hospitals in this country were visited and one abroad; the matter was discussed with administrative, medical, and nursing staffs; conferences were held with hospital authorities; and inquiries were made in America, where climatic and other differences have given a greater experience than has been obtainable here. Dr. Rayner describes only the "bubble-bottle" variety of apparatus, and does not mention the now widely used M'Kesson and dry flow-meter types, which might conceivably be more prone to the development of internal static electrification. He appears disinclined to accept the American view that charges developed in the anaesthetic apparatus itself are often responsible for explosions, but points out that much experimental work on a variety of equipments and under various conditions would be required to estimate the importance of this source of electrification. It has been recognized for some time that electrical charges can readily be produced by the movement of warm dry blankets or sheets on trolleys or similar articles mounted on rubber-tyred and therefore insulating wheels, and particularly if they have rubber sheets or mattresses. Dr. Rayner was often able to produce in this way sparks of 0.5 mm. upwards, the longest being 15 mm. He considers that a discharge capable of being felt with the finger indicates a dangerous condition, and draws particular attention to the danger of ether–oxygen mixtures, owing to their wide range of explosibility and ease of ignition at low temperatures, perhaps as low as 200° C. In several hospitals the electrical resistance of the ordinary granolithic type of floor was measured, and this was demonstrated to be low enough to justify the use of the trailing chain as a safety measure, though the latter is of no value upon floors of rubber or cork carpet, both of which may act as good insulators. Practical tests on both a granolithic and a tile floor have demonstrated that no electrification could be produced when the chain was in use, though without it a spark and shock were readily obtained. The chain need only be a light one, with links of 1/2 to 1/4 inch, and about 3 inches should trail on the floor.

Electrification by friction is much facilitated by a dry atmosphere, and experimental evidence from America shows that there is very little danger if the relative humidity, which may need to be artificially maintained, is not allowed to fall below 65 per cent. Very cold, dry weather produces the worst conditions, for the outside air contains little moisture, and when it is heated the relative humidity becomes low. Air-conditioning may produce the same effect, for if the washing water is colder than the air it may withdraw moisture from it, thus causing a low relative humidity on reheating. A point worthy of note, though it may be only coincidence, is that air-conditioning plant is installed in two hospitals in this country which have had trouble with electrification and anaesthetic ignition. Although experimentally electrification may be readily caused by particles of fluid or dust in a stream of gas at high velocity, Dr. Rayner does not think that this is likely to happen under the conditions in which anaesthetic apparatus is employed, but he does recommend that oxygen cylinders should be stored and used valve uppermost in order to avoid trouble from possible internal condensation, and that a little should be

[1] *British Medical Journal*, 1937, **2**, 383.

blown off when starting a fresh cylinder. Mechanical ignition may occur in reducing valves, and is avoided by turning on the cylinder valve very slowly.

An electrically conducting rubber has recently been developed by the Dunlop Rubber Company, and the use of such a material promises to provide an effective method of reducing dangerous electrification in anaesthetic and other equipment. It can be made with varying degrees of resistivity, while retaining the ordinary properties of rubber. It is important that the resistance should not be too low, not under 100,000 ohms, otherwise there would be danger should the rubber come into contact with a source of electrical supply. In this case the power absorbed might be enough to cause ignition in a short time, without the current being large enough to melt an ordinary circuit fuse. A corrugated breathing tube of this rubber, about 1 m. long, 30 mm. diameter, and 1 mm. thick, had a resistance between the ends of about 1 megohm. Its properties were not impaired by such tests as prolonged exposure to the vapours of ether and chloroform, soaking in lysol, and boiling. A breathing bag of the usual type showed a resistance between the ends of about 0.5 megohm. Besides the above-mentioned frictional electricity there are many possibilities of danger from ordinary articles of electrical equipment. These can only be avoided by the strictest care in design, construction, and use.

TRAUMA OF THE HEART

The effects of trauma on the heart, leaving aside penetrating wounds, is one of the most controversial of subjects and one that has been relatively neglected, though it is of great importance, especially from the medico-legal point of view. Elsewhere in this issue (p. 433) Dr. Hugh Barber expresses the view that violence to the chest wall and the strain of great muscular effort are responsible for a variety of cardiac lesions, though perhaps many will not be able to accept his belief that "more cases of heart disability following trauma are overlooked than are diagnosed by mistake." Direct violence to the chest wall may be followed by arrhythmias, but perhaps the sequence is too infrequent to be of great significance; or by angina pectoris, and it is not difficult to believe that angina could first appear in a subject predisposed by coronary disease after an event which altered both the excitability of the nervous system and the general physical condition. The possibility of contusion of the myocardium as a result of trauma without external wound seems very real, and, as has been suggested, might be revealed by the electrocardiogram. Dr. Barber's second category, the indirect traumatic effects on the heart of strain, is the more interesting and even more difficult of proof. There is no question at all that the aortic valve can be ruptured by great muscular effort and many cases have been reported, but rupture of the normal valve or of the normal aortic wall by strain is considered impossible by some, since experimentally enormous pressures are required to break these structures. The problem is difficult, first, because absence of disease cannot be presumed from an absence of symptoms or signs prior to the rupture,[1] and, secondly, in cases where post-mortem examination is possible the interpretation of the pathological changes is difficult because vegetations are likely to form rapidly at the site of the tear. In a series of cases of rupture of the aorta Klotz and Simpson[2] found microscopical lesions in the media, though little or no defect was visible on superficial examination. Functional impairment of the myocardium through a sudden strain, or the more prolonged effort of athletics, the heart being previously healthy, is likewise hard to prove. The orthodox view to-day is that this does not occur, though Dr. Barber is inclined to believe that it may. Complaint of dyspnoea, palpitation, and precordial pain and the finding of tachycardia in a working man after an accident is extremely common; these, however, are usually the expression of an anxiety state (often associated with the question of compensation) and not at all indicative of cardiac disease. The forcible and rapid apex beat may lead to a diagnosis of acute dilatation; but fluoroscopy will probably show a heart of normal size. Such symptoms may abruptly disappear with the settlement of a claim. On the other hand, strain may very seriously and irreparably damage a myocardium which is the seat of chronic disease or one affected by an acute infection, and the best evidence for presence or absence of these conditions can, as Dr. Barber points out, usually be obtained from an accurate and detailed history.

MINERAL CONTENT OF THE BRAIN

Quantitative estimations of the inorganic mineral constituents of the brain, such as that of Tingey,[3] though of value for determining the relative amounts of these substances in different areas of the brain and in various abnormal conditions, do not give precise information regarding the localization of mineral salts within the brain tissues. The method of micro-incineration, modified by Scott, enabled Alexander and Myerson[4] to undertake an elaborate investigation into the distribution of mineral salts in the cellular architecture of the brain. Briefly, the method consists in exposing very thin paraffin sections of brain tissue to temperatures gradually rising to 650° C., whereby the organic constituents are completely consumed, leaving the mineral constituents only on the slide. These slides are studied at low power by oblique transillumination and at high power by dark-ground illumination, and by comparison with contiguous sections which have been stained with ordinary tissue stains the mineral constituents can be accurately localized. The particular minerals which can be identified with certainty

[1] See the case reported by Howard, C. P., *Canad. med. Ass. J.*, 1928, **19**, 12.
[2] *Amer. J. med. Sci.*, October, 1932, p. 455.
[3] *J. ment. Sci.*, 1937, **83**, 452.
[4] *Amer. J. Path.*, 1937, **13**, 405.

by this method are iron, calcium, and silica, and it is claimed that in addition to its value for the localization of mineral salts in the nervous system this method surpasses in accuracy all known staining reactions for the demonstration of iron. The normal adult brain when studied in this way is seen to contain mineral salts in the pyramidal cells of the cerebral cortex, the Purkinje cells of the cerebellum, and the anterior horn cells of the spinal cord. These salts consist of calcium, a little iron oxide, and certain other water-soluble minerals, and are confined to the cytoplasm and the nucleolus. The nuclei contain practically no minerals, nor do the neurofibrils, the axone hillock or the axone itself. In the new-born infant the distribution of mineral salts is reversed; most of the minerals are concentrated in the nuclei of the ganglion cells and the cytoplasm contains very little. The ependyma of the ventricles contains much mineral ash, and in granular ependymitis there is a large increase in its mineral content. The cerebral blood vessels are rich in minerals, which are found chiefly in the fibrous coat; the muscle, the intima, and the elastic tissue giving no mineral residue. Many diseases of the brain were studied by the micro-incineration method, and among other interesting results were those relating to the mineral content of cerebral tumours. In these there is a great increase in the amount of mineral ash, the minerals being found in the nuclei rather than in the cytoplasm of the tumour cells. A similar increase in mineral content of the nuclei is seen in inflammatory conditions of the nervous system, particularly in meningitis and in syphilitic meningo-encephalitis. In disseminated sclerosis and in areas of softening or necrosis, on the other hand, there is a loss of mineral salts in the affected areas, only the blood vessels, infiltrating cells (especially the "scavenger" cells), and astrocytes giving a mineral residue. Two results of special interest were discovered in Alzheimer's disease. The senile plaques which form such a characteristic feature of the histology of this condition were found to contain no mineral salts at all, while the neurofibrillar "tangles" in the nerve cells differed from normal neurofibrils in that the "tangles" were rich in mineral residue, while normal neurofibrils yielded no mineral ash.

INDUSTRIAL EYE-STRAIN

There has been issued from the Factory Department of the Home Office a short but distinctly important paper entitled "Industrial Eye-strain: Special Measures Needed where Fine Work is Done."[1] Work which cannot be seen clearly in good daylight unless brought within ten inches of the eyes is fine work. There are many modern occupations that require sight at this short distance and for many hours during the day: looming in weaving, linking in hosiery, the mounting of electric lamp filaments, examining steel balls for minute defects, invisible mending, and so forth. Who has not seen girls sitting in shop windows where invisible mending is done and has not wondered at the shortness of the focus at which the work is performed? This work demands adequate light and the correction of any inherent defects of the eyes of the workers; and in such types of occupation as have been cited great advantage can be gained by the additional provision of spherical and prismatic correcting glasses, so as to relieve the strain put upon the accommodation and convergence powers of the workers. There is a common prejudice against magnifying glasses. Perhaps resort to them is taken to be a confession of weakness. But there is no harm in the use of such glasses; indeed there are many advantages. Every ophthalmic surgeon uses powerful combinations of lenses and prisms for the better examination of the eyes of his patients. They enable him to do work that he could not otherwise do and to do it without strain. The Factory Department's paper gives examples of combinations of spheres and prisms useful for the several types of work, and which experience has shown to be suitable. Warning is given as to the need for expert examination of the eyes. "If eye-strain is experienced when the illumination of the work is good an ophthalmologist should be consulted." Slight errors of refraction are more common than is generally realized; these increase the strain of fine work. "Eye-strain may, however, be caused by wearing unsuitable glasses, so that it is important not only to obtain competent advice in the first place but also to ascertain from time to time whether any change in the prescription of the glasses is desirable. Similarly, persons who already wear glasses but experience eye-strain should make sure their glasses are suitable." This short paper should be in the hands of every doctor and every welfare worker attached to shops or factories where fine work is done.

[1] Form No. 1983. Factory Department, Home Office. H.M. Stationery Office. (1d.)

MALARIA IN MALAYA

In the annual report of the Malaria Advisory Board for 1936,[1] Dr. A. Neive Kingsbury briefly reviews the work carried out on research and control of malaria in the Federated Malay States. Though the report is a small pamphlet of some 20 pages only, it is well worth close study. The organization for malaria control in the F.M.S. is vested in the Malaria Advisory Board. This is a strongly constituted body which in addition to research and public health representation includes the general manager, F.M.S. Railways, and the adviser for drainage and irrigation, Malay States. The carrying out of measures advised by the Board is thereby much facilitated. During the year 27,000 cases of malaria were admitted for treatment in the F.M.S.—15,880 in Government hospitals and 11,354 in estate hospitals. The total deaths among these numbered 598, or a case mortality of 2.2 per cent. The peak of highest incidence in all the States was in May, except in Pahang, where it was in June. Following the peak there is a gradual falling off in the number of cases, reaching a minimum in February and March. Special attention was given to experiments designed to test the efficacy of atebrin in treatment and prophylaxis. In a series of 200 cases

[1] Kuala Lumpur: Printed at the Federated Malay States Government Press by H. T. Ross, Acting Government Printer. 1937. $1 or 2s. 4d.

treated with intramuscular injections of atebrin musonate (three injections of 0.3 gramme) the immediate curative effects were satisfactory, febrile symptoms and parasites in the peripheral blood disappearing more rapidly than in controls treated with quinine or atebrin. Two cases, however, showed alarming though transitory nervous symptoms; as pointed out, the usually recommended dose was exceeded. Experiments on estates in relation to medicinal prophylaxis were carried out by the Institute of Medical Research in collaboration with the Malaria Commission of the League of Nations. In three groups receiving respectively 0.2 gramme atebrin on two consecutive days each week, 0.4 gramme quinine, and no prophylactic drug, both atebrin and quinine after a few months were equally effective, but quinine took longer to control the malaria. With atebrin, attacks of malaria ceased almost entirely within a fortnight of the beginning of treatment. In the control group the incidence remained high. When prophylactic issue was stopped numerous attacks of malaria occurred, three-quarters of which were in the two hitherto protected groups. Among other work carried out there has been investigation of the cost of oiling and drainage, anopheline survey of the Selangor coast area where *Anopheles sundaicus* (*ludlowi*) is prevalent, and measures against malaria in this area; also experiments on the deterioration of open cement drains and experiments with larvicides. In the latter connexion two new proprietary preparations were found less effective than the usual (M.D.B.) mixture employed. Experiments on the use of shade in larval control (*A. maculatus*) were also initiated. *Crotalaria*, *Tephrosia*, and *Lantana* grew satisfactorily but did not give a dense enough foliage. The majority of the *Cassia* died, growth of *Duranta* was poor, and that of *Bamboo* variable. At the suggestion of the Agricultural Department a thickly growing creeper, *Mikania scandens*, has been planted to cover the *Lantana*, and results to date are promising.

URINARY ANTISEPSIS

It is now becoming recognized that sulphanilamide, in addition to its other remarkable actions, is the most dependable of all urinary antiseptics. Its advantages over mandelic acid are that it acts even more rapidly, is regularly excreted, does not demand an acidification of the urine which in some patients is difficult to attain, and is less unpalatable and cheaper. In commenting recently on a study of its action published in this country[1] which contained the statement that the effective *p*H range in urine of sulphanilamide is from 5.2 to 6.8, we drew attention to a recent paper by Helmholz, who asserted that the drug is more bactericidal in an alkaline urine. This observation is now amplified by Helmholz and Osterberg,[2] who have carried out a more elaborate series of experiments on the bactericidal action of different concentrations of sulphanilamide in urine of different reactions, employing several different bacteria. Their results may be summarized in the statement that, whereas concentrations of sulphanilamide of 40 mg. per 100 c.cm. or more are necessary for effective action in acid urine (*p*H 6.2), only half this amount need be excreted to exert the same effect in urine of *p*H 7.3 to 7.8. From this it would appear that to secure maximum effect, perhaps with only a moderate dose, steps should be taken also to maintain an alkaline urinary reaction. A supreme merit of this form of treatment is that it succeeds in *B. proteus* infections, against which hexamine and mandelic acid are powerless, owing to the urea-splitting action of this organism and the consequent impossibility of rendering the urine acid enough for these two drugs to act. Apparently only one organism commonly found in the urinary tract, *Streptococcus faecalis*, is completely resistant to sulphanilamide. These authors also describe new experiments on the bactericidal action of different previous conclusion, only the free form of sulphanilamide, and not the conjugated, acts bactericidally in the urine. There is therefore as yet no explanation of their observation that the naturally excreted drug is more active *in vitro* than the same quantity added artificially to urine.

[1] *British Medical Journal*, 1937, **2**, 589.
[2] *Proc. Mayo Clin.*, 1937, **12**, 661.

PROPHYLAXIS AGAINST WHOOPING-COUGH

Few who have followed the literature on whooping-cough* will be convinced that any vaccine at present available modifies with certainty the course of pertussis after the cough has developed. The prospect of prophylaxis is less discouraging, and confident claims are still being made. Kendrick and Eldering[1] reported a 6 per cent. incidence among the vaccinated and 75 per cent. in the unvaccinated, the groups containing 700 to 800 children. Sauer[2] has reviewed a number of clinical observations showing a high degree of protection following the injection into children of the large volume of 10 c.cm. of vaccine in divided doses. On the other hand Shaw,[3] in the same journal, states that the results of field tests recording the effectiveness of vaccines are at present conflicting, and that though there is evidence that some protection is conferred other evidence denies this; there is consequently little justification at present for the advocacy of universal immunization. According to Brooks and Miller[4] it still remains to be proved that it is possible to immunize actively against whooping-cough. Because of the equivocal results of prophylactic vaccination, and because of the existing differences of opinion, the Department of Health in the City of New York[5] has now decided to restrict the issue of vaccine to two centres for carefully controlled experiments. Paediatricians will still feel, with Topley and Wilson, that the ultimate court of reference must be the results in vaccinated persons when exposed to natural infection. In their efforts to produce better vaccine which will not require a tedious series of doses immunologists have used agglutination, complement deviation, and the "opsonocytophagic" tests. The relation between these various tests is not clear.

* See also *British Medical Journal*, 1936, **1**, 316; ibid., **2**, 184.
[1] *Amer. J. publ. Hlth.*, 1936, **26**, 8.
[2] *Amer. J. Dis. Child.*, 1937, **54**, 979.
[3] Ibid., 977.
[4] *J. clin. Invest.*, 1937, **16**, 749.
[5] *Quart. Bull. City N. Y.*, 1937, **5**, 69.

Attempts have been made to test protection in animals. Powell and Jamieson[6] employed cultures the virulence of which was enhanced with starch, and Burnet and Timmins[7] made use of nasal application; both groups of workers obtained a fair degree of protection. Evans and Maitland[8] by extracting, freezing, thawing, and grinding the bacilli obtained a toxin and a "bacterial antigen" but did not achieve satisfactory protective immunity. Cruickshank and Freeman[9] have recently re-examined the possibility of immunizing animals with intact bacilli or with extracts made by the highly promising Raistrick–Topley methods. By some half-dozen injections of either acetone-extracted culture of *H. pertussis* or an alcohol precipitate of tryptic digest these authors have secured a survival rate of approximately 90 per cent. in groups of thirty mice injected intraperitoneally with six to nine thousand million bacilli—a dose that kills the whole of the thirty non-vaccinated controls. The alcohol fraction contains no intact protein and can be stored. This method bids fair to ensure the production of vaccine that will give as high a degree of protection to mice as properly prepared typhoid vaccine will against the subsequent injection of a lethal dose of typhoid bacilli. There is ground for hoping that similar favourable results may be obtained in man.

FACTORY WELFARE

The February number of *The Times Trade and Engineering*, in addition to its usual articles, contains a lengthy supplement devoted to Factory Welfare. This supplement should prove of great value to everyone interested in factory management, and especially so if it could be re-issued in a convenient book form in place of the present newspaper pages. It for the most part relates to the new Factory Act, which comes into force on July 1, and the various provisions are explained in non-technical language by a number of past and present factory inspectors. The introductory history of factory legislation, by Mr. H. W. Younger, enables us to realize how far we have progressed since 1802, when Parliament passed an Act "for the preservation of the health and the morals of apprentices and others." Not till 1819 were children (aged 9 to 15) prohibited from night employment in the cotton mills and from working more than 72 hours a week. The regulations were gradually strengthened in subsequent years, especially in 1833, when factory inspectors were first appointed and children aged 9 to 12 were forbidden to work more than 48 hours a week. In 1850 a Ten-Hours Act was passed which limited the hours of work of women and young persons to 60 a week, but the provisions concerned only the textile trades, and it was seventeen years later before they were extended to other industries. It seems astonishing to us with our present-day outlook that the first medical inspector was not appointed by the Home Office until 1898, and the modern welfare movement in industry, as we now know it, did not begin until the war. Its origin was largely due to Mr. Lloyd George, who as Minister of Munitions set up a department to deal with the health of munition workers. In 1918 the Industrial Welfare Society was founded, with the King (then Prince Albert) as President. The main details of the new Act are explained at some length by Sir Gerald Bellhouse, formerly Chief Inspector of Factories, while other articles deal with such topics as lighting, heating, ventilation, canteens, sanitation, the fencing of machinery, first aid, and the application of psychology to industrial problems.

[6] *J. Immunol.*, 1937, **32**, 153.
[7] *Brit. J. exp. Path.*, 1937, **18**, 83.
[8] *J. Path. Bact.*, 1937, **45**, 715.
[9] *Lancet*, 1937, **2**, 567.

EPIDEMIOLOGY OF PLAGUE

The report of the Haffkine Institute for 1936 includes some interesting and important observations on the epidemiology of plague. It has been believed that, even when plague among human beings has come to an end in a particular locality, the disease continues to smoulder among the rats, which thus acquire a high degree of resistance. This theory is refuted by the results of the daily examination of large numbers of rats in Bombay during the two years preceding the report. In no case was any sign of infection found. An alternative hypothesis maintained that, during an epidemic in a locality, rats acquired immunity and transmitted it to their young. Investigations with white mice by Sokhey demonstrated that the young born of parents fully protected against plague showed no immunity whatsoever. In the course of these observations rats had been obtained from Dharamsala, a hill station in the Himalayas where plague had not recently occurred. Some of these rats nevertheless showed high resistance to plague, indicating that there exist in nature strains of rats which are naturally immune. It would thus appear that the cause of cessation of an epidemic in a locality is the death of the susceptible and the survival of the naturally resistant strains. How then do fresh pandemics or epidemics begin? A further observation throws light on this problem. While it was found that the house rat (*Rattus rattus*) was chiefly responsible for the spread of plague to human beings in Bombay, another animal, the small field rat (*Gunomys varius*), was incriminated in certain districts. Examination showed the small field rat to be highly susceptible and the house rat highly resistant. These observations indicate that an increase in numbers of this small field rat, or its replacement of the house rat in human habitations, sets the stage for the outbreak of a fresh epidemic. The report stresses the importance of concentrating on further studies of plague during periods of quiescence following a pandemic with a view to devising intelligent means of preventing fresh visitations. "Unless deliberately prevented, pandemics are likely to come again as they have come in the past."

The Secretary of State for the Colonies has appointed Dr. A. J. R. O'Brien, C.M.G., *M.C.*, M.R.C.P., D.P.H., Assistant Medical Adviser in the Colonial Office, to be his Chief Medical Adviser in succession to the late Sir Thomas Stanton.

SURGICAL PROCEDURES IN GENERAL PRACTICE

This is one of a series of articles contributed by invitation

THE REMOVAL OF INNOCENT TUMOURS

BY

ERNEST FINCH, F.R.C.S.

The word "tumour" simply means "swelling," and includes those swellings due to inflammation, cystic formation, and neoplastic disease. The innocent tumour which the general practitioner is tempted to try to remove is usually one that is obvious and superficial, such as those occurring in the skin, and diagnosed as warts, moles, papillomata, sebaceous cysts, naevi, etc. The tumour may be beneath the skin—for example, a lipoma—or more occasionally it may be connected with some definite organ, such as the breast, thyroid gland, lymphatic glands, or a bone.

General Principles

For any method of treatment to be correct the first necessity is to make an accurate diagnosis, and it is in just such tumours as these that this may be so difficult. In many cases it is impossible to be certain of the diagnosis unless this has been confirmed by a skilled pathologist. Hence it is imperative that any apparently innocent tumour should on removal be submitted for microscopical examination and preferably the whole of the tissue excised, and not merely that portion of the tumour which does not look "quite normal."

"A man aged 46 presented himself at the dermatological clinic with what was diagnosed as an angioma just above the right eyebrow. He was sent to the radium department for treatment, which was carried out by a surface applicator, a portion of the growing edge being first removed for biopsy. The treatment was eminently successful, but the pathologist's report on the tissue removed was that it was a hypernephroma. The position of affairs was explained to the patient, who had never had any symptoms referable to the urinary system. He submitted to a direct pyelography, which showed a filling defect in the pelvis of the right kidney. The kidney was removed and contained a hypernephroma having the same structure as the skin tumour."

This case exemplifies another difficulty confronting the surgeon. The question is not merely whether the tumour is innocent or malignant, but whether, if malignant, the obvious tumour is the primary or a secondary growth. Every practitioner is familiar with cases of melanoma in which the secondary growths have been obvious long before the primary. The presence of pigment in a tumour, however innocent the latter may appear to be, should usually be a warning to the practitioner to leave that tumour alone and pass the responsibility for its removal on to others. It has been said that bones are full of base black ingratitude, and that when they are broken it oozes out of them; the same may be said of pigmented tumours. They must be removed entire and with as wide a margin as possible of apparently healthy normal tissue round them.

"A man aged 52 went for a walk and chafed the skin over the right heel. He tried various remedies with no avail, and then consulted his doctor during an epidemic. The doctor told him he was far too busy to attend to it, and advised different shoes and socks. The next doctor he consulted injected some local anaesthetic and scraped the surface to promote healing. This treatment was unsuccessful. The man next consulted a chiropodist, who tried strapping and ointment equally unsuccessfully. Nine months later the local growth was obviously a melanotic sarcoma, and the growth had already metastasized in the inguinal and femoral glands."

This case illustrates the fact that positive harm may result by not completely removing a tumour. A portion of a tumour left behind will, if it is innocent, continue to grow, perhaps with a malignant character superadded; and if malignant the rate of growth will be accelerated and the formation of metastases encouraged. This must always be remembered when a portion of the growing edge of a tumour is removed for a pathological report. How often does the patient complain that "it has got much larger since a small piece was cut out for examination"! He usually wishes the tumour to be removed for cosmetic reasons and only occasionally for pain, unless the position of the tumour is such that it is exposed to pressure or itself presses on sensory nerves. The subtlety of neoplastic disease is its painlessness until fixity occurs, and this often implies inoperability.

The doctor usually urges removal of an innocent tumour because if left it may become malignant. The only rational tumour is the lipoma; it will never disgrace its innocence, however old and big it may be. No other neoplasm can be trusted to remain benign. The very fact that the patient asks for treatment for cosmetic reasons should make the operator consider the possibilities of an unsightly scar from the operation. The resulting scar after removal of a tumour may cause much more psychical disturbance than the original tumour, and the patient, as in so many other cases, considers that the cure is worse than the disease. This is so in the removal of all tumours on the face, especially when the scar from the operation wound will be in the neighbourhood of the eyelids. The deformity resulting from a bad scar in this position can often only be rectified by an extensive plastic operation. The success of all surgical procedures, whether of the so-called "minor" or "major" type, depends upon the rigid adherence to the three fundamental principles of surgery—namely, the abolition of infection (sepsis), the control of haemorrhage, and the relief of pain.

It is precisely in the surgical removal of sebaceous cysts, ganglia, warts, papillomata, etc., that it is apt to be thought unnecessary to be too particular: these are such slight operations that a makeshift procedure may be thought sufficient. The operations must, of necessity perhaps, often be carried out under conditions and in places far from ideal; but this is no excuse for not rigidly adhering to fundamental surgical principles. It is the sepsis following the prick of a pin or needle that so often leads to a fatal septicaemia or pyaemia. No margin for error can be allowed in the preparation of the site of operation, the surgeon's hands, and the instruments, bowls, towels, swabs, and solutions used.

If the tumour is on the scalp the hair must be removed from a surrounding area wide enough for the surgeon to see exactly what he is doing, and the towels must be placed so that the ligature material and instruments are not resting on the "unprepared" surface of the face or scalp during the operation. The eyes must be protected from the

effects of the solutions used in the preparation of the skin, which is best done with methylated spirit. The operation will usually be performed with local anaesthesia, and in all cases the co-operation and the psychical control of the patient are necessary.

There are various methods by which innocent tumours may be removed: These are:

1. Excision, with a margin of surrounding healthy tissue.

2. Enucleation, either from within the capsule or including the capsule.—In the removal of cysts it is most important that the whole of the membrane lining the capsule should be removed, and in order to do this the capsule should, as a rule, be removed as well.

3. Destruction of the tumour mass.—This may be achieved by various cauterizing agents, such as acids, carbon dioxide snow, diathermy, electrolysis, radium, or deep *x* rays. The practitioner usually has only acids and carbon dioxide snow at his disposal, so of necessity the other methods must be left to experts.

It must be remembered that, with the exception of radiotherapy in the hands of an expert, all these methods leave a scar. Treatment with radium is certainly the least painful means to employ, but the pain of the subsequent reaction may be considerable, and if an overdose is given the resulting scar may be not only unsightly but a distinct menace. The treatment of tumours by any method of irradiation should be left strictly to experts. The treatment of angiomata by the injection of boiling water has been warmly recommended by some; but the technique is difficult, the procedure apt to be very painful and the result disappointing; it is therefore not to be recommended for general use. The methods adopted will naturally differ according to the nature of the tumour, its situation, and the appliances available.

Papillomata

These may be the result of local infection and discharges, which if present must first be cured. The papillomata will perhaps then disappear; if they do not they can be treated with trichloracetic acid (100 per cent.) or be excised. Warts which occur on the fingers, especially in children, may be flat or pedunculated. They are usually multiple, often appear in successive crops, and several may coalesce to form quite a large mass. They are treated by cauterizing each individual wart daily with 10 per cent. salicylic acid collodion, or by dropping pure glacial acetic acid or fuming nitric acid on to the wart from a glass rod once a week. Carbon dioxide snow can be used by making the solid stick from the gas, cutting the stick the size of the wart, and applying it by steady pressure for half a minute. Considerable pain may follow later when the reaction occurs.

If these methods are not successful then irradiation by *x* rays or radium should cure; otherwise the papilloma must be removed with an adequate margin of healthy tissue. Warts, often pigmented, occurring in the elderly, may be the starting-point of malignant disease, and, if growing, must be excised, a sufficient margin of healthy surrounding tissue being taken at the same time.

Angiomata (Vascular Naevi)

These tumours are usually congenital, the capillary and cavernous types being the most common. A naevus, however small, should be treated as soon as possible. Radium is now the method of choice. If the growth is thin and small treatment with carbon dioxide snow is effective. The snow is applied for half a minute, and the treatment repeated if necessary. The reaction may be severe, and subsequent applications should only be given when it has subsided. If the naevus is excised the incisions should be made outside the margin of naevoid tissue, thus minimizing haemorrhage and ensuring complete removal.

Sebaceous Cysts

These are the commonest tumours met with in the skin; they are tumours definitely *in* the skin. The usual indications for removal are disfigurement and attacks of inflammation. They are removed by enucleation or dissection, but whichever method is used the whole of the cyst wall must be taken away. Incomplete removal of the cyst wall results in recurrence, sinus formation, or the appearance of a granuloma known as Cock's peculiar tumour, which may be mistaken for an epithelioma.

Enucleation is carried out by transfixing the base of the tumour with a narrow-bladed scalpel and cutting right through the cyst wall on to the surface. The contents of the cyst are then expressed and the divided cyst wall on each side seized with forceps and twisted out entire, any adhesions between it and the surrounding tissues being divided with scissors.

If the cyst has been inflamed it is better removed by dissection. An elliptical incision is made over the most prominent part of it, the ends of the incision projecting well beyond the actual cyst wall; the skin is then undermined on each side until well clear of the tumour, and the whole cyst in its capsule dissected out, with the elliptical piece of skin attached to the prominent part. Haemorrhage is stopped by the ligature of vessels, and the skin edges are approximated. If the cyst is on the scalp, haemorrhage is controlled not only by ligature and the sutures approximating the skin but by pressure exerted on to the raw surface by bandaging firmly against the skull. If the position of the cyst is such that firm pressure cannot be exerted and there is a general ooze from the raw surfaces, a narrow piece of sheet rubber should be inserted as a drain for twenty-four hours.

Other cysts occurring immediately beneath the skin, such as implantation cysts and dermoids, should be dissected out; if the raw surface oozes, drainage should be established for twenty-four hours. It is advisable that the drainage rubber should always either be stitched to the skin or have a safety-pin attached so that it cannot slip into the cavity and subsequently cause a sinus.

Lipomata

These constitute the most benign of neoplasms. They are usually encapsuled. The capsule is tense and fibrous, being firmly connected to the surrounding structures but not to the neoplasm. The diffuse lipoma is not very amenable to treatment, as it will recur in course of time owing to the impossibility of removing it completely. Any specially painful lipoma—for example, in the condition known as adiposis dolorosa—can be removed easily, but as a rule some other tumour, which has previously been painless, becomes the seat of pain, and in its turn will have to be excised. A lipoma should be removed through a generous incision, so that all the outlying nodules of the neoplasm are excised. The incision should be made deliberately through the skin and into the tumour, the enucleation thus taking place from within the capsule. If the incision is not large enough outlying nodules may be left, and these will continue to grow and another tumour form.

These tumours are sometimes very large, and after removal a big cavity is left; all obvious bleeding points should be secured and ligatured, and drainage of the cavity carried out for twenty-four hours.

Fibromata

Fibromata are clinically divided into soft and hard varieties. They may occur in many different organs, have a wide distribution, and may be single or multiple. They *must* be removed completely, including the capsule, by dissection, and cannot be enucleated satisfactorily. Diagnosis is often so difficult in these cases that the whole tumour should be submitted for expert pathological opinion. Those occurring in connexion with fascia are known as "recurrent fibroma," and are probably fibrosarcomata from their inception. Fibromas, usually of the hard variety, occurring in connexion with nerves are single or multiple as elsewhere; if single, the pain experienced when the tumour is subjected to pressure may be intense: an example of this is "the painful subcutaneous nodule" often met with on the sole of the foot. The single neurofibroma must be removed by dissection, but multiple fibromas are best left alone and the deformity accepted.

The fibromatosis that sometimes occurs in a scar, known as keloid, is best left alone unless it causes great pain. It can, however, be removed, but the condition will generally recur in the new scar, though it is then usually not so painful. A fibroma (epulis) often grows from the alveolar or dental periosteum around the neck of a tooth. It must be removed whole, and this means that in most cases one or two teeth will have to be extracted to expose the origin of the tumour, or even a small portion of the alveolar margin excised to make complete removal certain. It is advisable that the whole tumour should be sent to the pathologist for microscopical examination.

Chondromata

These tumours, usually multiple, occur most commonly in the metacarpal and phalangeal bones, and if left will ultimately protrude through the compact bone. If small they are treated by enucleation, and as they have no connexion with the articular cartilage removal will not interfere with the growth of the bone or the function of the joint. A bone-graft may have to be inserted into the parent bone to prevent post-operative fracture. If the tumours are large amputation will have to be considered. The cartilage may calcify, but ossification rarely takes place; malignant change may also occur. Before any operation is undertaken it is desirable to have both hands radiographed.

Osteomata

The cancellous variety of osteoma in the neighbourhood of the epiphyseal cartilage usually develops in a growing bone, but in most cases ceases to increase before the end of the normal period of growth. As a rule the tumour has a bulbous end covered with hyaline cartilage and a pedunculated base. An adventitious bursa is often present over the bulbous extremity, giving rise to a sense of fluctuation. If the tumour is causing any disability it must be removed through a generous incision, and important structures surrounding it, such as tendons, blood vessels, and nerves, should be adequately retracted and respected. The whole tumour, including the bursa, the hyaline cartilage, and the portion of compact bone from which it is growing, should be removed. The cancellous tissue of the parent bone is thus opened up when removing the flake of origin from the compact tissue; consequently, if sepsis supervenes it may spread to the diaphysis. These tumours are often multiple, and others should be looked for and the patient's attention drawn to them.

The subungual exostosis usually appears on the dorsal surface of the terminal phalanx of the big toe. It gives rise to intense pain and projects under the nail bed. The nail often breaks off and there is ulceration of the bed. The resulting granulation tissue may mask the small tumour, which is either an exostosis or a fibroma. Treatment consists in removing the nail and also the whole of the underlying tumour by curetting it out of the parent bone; occasionally partial amputation of the terminal phalanx is necessary.

Ganglia

A ganglion is a cystic swelling in the neighbourhood of a joint or tendon sheath occurring commonly in the region of the wrist or foot. It may disappear spontaneously or after subcutaneous rupture caused by injury, or even occasionally after the fluid, if thin enough, has been removed by aspiration. The injection of sclerosing fluids—for example, sodium morrhuate 5 per cent.—has been recommended after aspiration, but these methods are so uncertain that radical excision by sharp dissection is looked upon as the method of choice. The associated tendons must be carefully retracted and not injured, and the whole of the cyst wall should be removed if possible. Any extension of the cyst wall between adjacent tendons should be carefully dissected out, and also any other smaller cystic formations in the neighbourhood. The joint capsule may be opened during the dissection, hence the importance of careful haemostasis after excision; and in addition, if the joint capsule has been opened, rest to the joint on a splint is advisable for a few days.

Bursae

These are often enlarged, and need excision owing to attacks of inflammation and pain. The same care should be taken in their excision as in the case of ganglia, the whole of the capsule being removed.

Conclusion

After excision of a tumour the closure of the wound needs the greatest care. An unsightly scar is to be avoided. The incision should, if possible, be planned in one of the lines or natural creases of the skin; fine needles should be used and accurate apposition of the skin edges obtained without tension or overlapping. A subcuticular suture is specially indicated in face wounds. All haemorrhage should be meticulously controlled, and the aseptic technique employed must be beyond criticism.

The operative field should be kept at rest as much as possible for a few days after the operation.

The whole of the tissue removed in excising any wart, mole, papilloma, naevus, fibroma, etc., should be sent for expert pathological opinion, and the report carefully filed for future reference.

After the operation the patient should be seen at the latest within twenty-four hours and inquiries made as to post-operative pain, throbbing of the wound, etc. If sepsis supervenes stitches will have to be removed as necessary and appropriate treatment instituted. The stitches may be removed in a few days. If a catgut subcuticular suture has been used it should be left, but if the suture is of non-absorbent material it should be removed when it has properly loosened, which is usually in about ten days.

The result of these small operations ought to be most gratifying to the patient and to the surgeon.

Nova et Vetera

JAMES YEARSLEY AND THE METROPOLITAN EAR, NOSE AND THROAT HOSPITAL, 1838-1938

The Metropolitan Ear, Nose and Throat Hospital, which celebrates its centenary this year, is the oldest ear, nose, and throat hospital in this country, and apparently in the world. It is true that Moorfields was started by John Cunningham Saunders in 1805 as an eye and ear infirmary, but only two years later it became an exclusively ophthalmic hospital, the first of its kind in the world; and that in 1816 an ear dispensary (which became in 1845 the Royal Ear Hospital) was established in Soho "in order to advertise his claims as an aurist" by John Harrison Curtis, a notorious quack with no medical qualifications, who had been a dispenser in the Navy and married a lady of means. But the Metropolitan Ear, Nose and Throat Hospital, founded as the Metropolitan Ear Institution, was from the first a hospital for the treatment of diseases of the ear, nose, and throat, and James Yearsley, its founder, repeatedly pointed out in his writings the influence on the ear of affections of the nose and throat, particularly in causing deafness. The gross ignorance and curious activities of Curtis, who for a time made £5,000 a year attending King George III, Cabinet Ministers, and half the aristocracy, before he fell into penury and fled the country, brought the specialty of the aurist into the lowest repute, from which it was raised by James Yearsley and Joseph Toynbee. Toynbee has been called the father of English otology, but if anyone really deserves that title Yearsley has at least as good a claim as Toynbee.

Early Work in Otology

Although Servetus, Eustachius, and Fallopius all described the ear in their anatomical writings in the sixteenth century, it was Joseph Guichard Duverney (1648–1730), professor of anatomy in Paris, who wrote the first treatise on otology in 1683, and Valsalva published his famous work on the anatomy and physiology of the ear in 1717. Guyot, the postmaster at Versailles, in 1724 succeeded in alleviating his own deafness by introducing through his mouth into the Eustachian tube a catheter through which he injected liquids: he communicated a description of the procedure to the French Academy of Sciences, which rejected it as ingenious but impracticable. Archibald Cleland, surgeon to Wade's Regiment of Horse, improved on this by passing the catheter through the nose and injecting warm water or blowing air through it (1731), and Jonathan Walthen (1755) treated catarrhal deafness by this method. In 1802 the great Sir Astley Cooper received the Copley Medal of the Royal Society for his memoir on perforating the tympanic membrane for deafness resulting from obstruction of the Eustachian tube in twenty cases, but he withdrew from aural surgery "as he was afraid to be thought an aurist." In 1821 Jean-Marc Itard, physician to the Royal Institution for the Deaf and Dumb in Paris, published his textbook *Mémoire sur les Maladies de l'Oreille et de l'Audition*, the first treatise on diseases of the ear, and led the ascent of otology from empiricism.

James Yearsley

James Yearsley was born at Cheltenham in 1805, and was apprenticed to Ralph Fletcher, a celebrated surgeon of Gloucester, whose daughter he subsequently married. On leaving Gloucester he became a pupil at St. Bartholomew's Hospital, and took the diploma of M.R.C.S. in 1827; some years later he graduated M.D. of St. Andrews University. After practising for a short time at Cheltenham and Ross-on-Wye he came up to London to practise as an aural surgeon, and soon achieved success. His writings show that he was familiar with the work of Itard, Deleau, Kramer, and other Continental otologists, but there is no evidence that he studied abroad. He founded the Metropolitan Ear Institution in Sackville Street, Piccadilly, in July, 1838, and in 1840 he published a textbook, *Diseases of the Ear* (London, Churchill, 1840). In his preface he observes:

> "Almost all diseases of the ear originate in a morbid condition of the mucous membrane of the throat, nose, and ear, which becomes affected from a variety of causes, among which cold, the exanthemata, especially scarlatina, and stomach derangement stand pre-eminent."

In this book he describes and illustrates his operation for removing the tonsil, holding it in a powerful-springed tenaculum and dissecting it out with a hawk-bill-shaped knife; he states (in his third edition, 1850) that he had removed the tonsils from the throats of more than 1,400 patients. He all but described adenoids many years before Meyer of Copenhagen (1862) recognized and described them:

> "I have sometimes suspected an overlapping of the mouths of the Eustachian tubes by the loose mucous membrane, and the results of treatment have occasionally justified the opinion I had formed; for shortly after excision of a small slip of mucous membrane from underneath the arches of the palate, amendment more or less considerable [in hearing] has taken place" (p. 138).

Yearsley and Toynbee

In the *Lancet* of July 1, 1848, Yearsley published an account of his "artificial tympanum" (a small pellet of moistened cotton-wool), which is still employed as a valuable aid in improving the hearing in deafness due to a post-suppurative perforation of the tympanic membrane. Toynbee in 1853 contrived another kind of artificial drum, consisting of a thin disk of vulcanized india-rubber with a stem of fine silver wire. Unfortunately controversy then ran high between the two aurists, who each claimed to have originated the artificial tympanum, and according to Peter Allen (who worked with Yearsley and succeeded Toynbee) "the war of words was long carried on with an unseemly bitterness, which was much to be regretted, on both sides." Yearsley was an enthusiastic advocate of the value of Eustachian catheterization in the treatment of deafness, and he states that he demonstrated his method to hundreds of medical practitioners anxious to learn how to pass the Eustachian catheter. Toynbee, on the other hand, discarded catheterism because, according to Peter Allen, he believed (erroneously) that during the simple act of swallowing with the nostrils closed the air in the drum is condensed. According to J. F. Clarke of the *Lancet*, a contemporary medical writer, Toynbee was an anatomist rather than a clinician: "Toynbee's splendid dissections were associated with no therapeutic or practical results." Certainly he dissected nearly 2,000 temporal bones, he was made an F.R.S. "entirely for his dissections," and the Toynbee Collection is to-day still one of the features of the Royal College of Surgeons Museum. Toynbee was the first aural surgeon on the staff of a general hospital in London, being appointed to the newly established St. Mary's Hospital in 1852. His textbook on diseases of the ear was published in 1860.

James Yearsley is memorable in other directions in the history of medicine. At the period when he came to London no hard-and-fast line was drawn between the qualified and the unqualified medical practitioner, as witness the case of John Harrison Curtis, nor was there any simple criterion by which the general public could distinguish the quack from the reputable practitioner. Yearsley, in conjunction with Tyler Smith and Forbes Winslow, founded in 1846 the *Medical Directory*, of which he soon became the sole proprietor on the retirement of his two partners. This directory was a precursor of the Medical Registration Act of 1858, as it showed clearly the advantages of placing the whole medical profession on one recognized list. Yearsley was also the originator and proprietor (though not the editor) of the *Medical Circular*

from 1852 until it was incorporated with the *Dublin Medical Press* in January, 1866. He died in 1869, aged 64, and was buried at Sutton Bonnington, Notts, where his eldest son was rector.

Migrations of the Hospital

At his hospital Yearsley had as a colleague Peter Allen and, from 1866, Edward Bishop. Sir William Wilde, the famous Dublin aurist and father of Oscar Wilde, was for a time a member of the committee of management, but apparently not on the active surgical staff. Toynbee died in 1866, the victim of experimenting with prussic acid and chloroform as an inhalation to relieve inflammation of the ear, and Peter Allen succeeded him as aural surgeon to St. Mary's Hospital. After the death of Yearsley the hospital, with Bishop, Abbots Smith, and Charles Lovegrove as surgeons, moved first to Red Lion Square, and later, in 1875, to Howland Street, the leading members of the staff then and for many years being George Saunders, Jacob Pickett, and Dawson Nesbitt. In 1893 it was moved to Grafton Street, Tottenham Court Road, where the staff was joined in 1897 by Hemington Pegler and Frederick Spicer, and it was through their efforts that the hospital was reorganized, the honorary surgical staff strengthened, the late Earl of Crawford became an active chairman (he was succeeded on his death by his son, the present Earl of Crawford and Balcarres), and in 1911 a move was made to Fitzroy Square, where the hospital still remains. With the aid of a substantial legacy from the late Mr. Hovis Smith it is to be rebuilt in its centenary year upon its present and an adjoining site.

R. S. S.

PHILIP SYNG PHYSIC (1768-1837)

Philip Syng Physic, the father of American surgery, was born on July 7, 1768, at Philadelphia, where he received part of his medical education before going to London, where he became John Hunter's favourite pupil and house-surgeon at St. George's Hospital in 1789. Two years later he went to Edinburgh, where he qualified in May, 1792, with a thesis on apoplexy. In the following September he returned to Philadelphia and gained considerable experience in an epidemic of yellow fever in 1793, when he became the surgical consultant of Benjamin Rush, to whom in turn he sent his purely medical cases. In 1794 he was appointed surgeon to the Pennsylvania Hospital. Until 1800, when Physic gave his first lesson in surgery, no separate teaching on this subject had been attempted in Philadelphia, surgery being included under the department of anatomy in the University of Pennsylvania. Five years later a chair of surgery was founded which Physic was the first to occupy, and he held it until 1819, when he was elected professor of anatomy, and continued in that office until 1831.

Although he published little of importance himself Physic exercised considerable influence on American surgery, his teaching having been preserved in a treatise on surgery by his nephew, John Syng Dorsey, whom he succeeded in the chair of anatomy in 1819. American surgery was indebted to him for the introduction of absorbable ligatures, the use of the seton in ununited fractures, the operation of artificial anus, the advocacy of rest in hip disease, the invention of a tonsillotome, a modification of Desault's splint, his description of diverticula of the rectum, and washing out the stomach with a syringe and tube in cases of poisoning. Physic also gained a well-merited reputation as an ophthalmic surgeon and as a lithotomist, his most famous operation being on Chief Justice Marshall, from whose bladder he removed a thousand stones with complete success. The honours bestowed upon him included honorary membership of the French Academy of Medicine and fellowship of the Royal Medical and Chirurgical Society. His death from myocardial failure and general anasarca took place on December 15, 1837.

MINERS' NYSTAGMUS

REPORT OF THE DEPARTMENTAL COMMITTEE ON WORKMEN'S COMPENSATION ACTS

The Departmental Committee appointed in 1935 has now issued its report on certain questions arising under the Workmen's Compensation Acts. The report—which is the result of an inquiry brought about by the general dissatisfaction with the diagnosis, certification, and management of cases of miners' nystagmus—is divided into three parts, of which the first is concerned with miners' nystagmus, the second with general medical procedure, and the third with lump-sum settlements. We shall here deal chiefly with the first and most important part.

The report contains some very interesting information concerning the history of miners' nystagmus; the cost (£450,000 yearly in compensation alone); the number of cases (averaging nearly 10,000 for several years, of which 2,000 are new); the distribution according to coal-fields; and the number of partially disabled men at work. Its main conclusions are: that the determining cause of miners' nystagmus is the low standard of underground illumination and that the cap-lamp should be in general use. The description of the disease is to be altered to "miners' nystagmus—process mining." Cases are not to be certified unless oscillations are found to be present for a definite period (at least fifteen seconds after stooping exercises in the dark).

Provision of Medical Boards

The provision of suitable work is essential for recovery. The necessity for co-operation between employers and workmen is insisted upon, and the Home Office is to obtain an undertaking from the Mining Association or individual colliery owners that they will do their utmost to provide suitable work. The certifying surgeons are to be retained, but medical referees are to be replaced by medical boards consisting of one ophthalmological surgeon and one physician. The decision of these boards is to be final. The committee does not curtail the right of the employers to have medical examinations made on their behalf, and presumably these reports may be forwarded to the board. It is the intention of the committee that this medical board shall have charge of all cases of miners' nystagmus throughout their course and that it shall decide whether the workman is fit for work; the nature of the work is also to be specified. A report on "The Diagnosis and Certification of Miners' Nystagmus," by a committee of the British Medical Association, was published in April, 1936, by order of Council (*British Medical Journal Supplement*, 1936, **1**, 238). The conclusions of this committee are in almost complete agreement with the findings of the Departmental Committee outlined above. The B.M.A. committee strongly advocated the replacement of medical referees by medical boards, which should consist of two ophthalmic surgeons and one physician. They were of opinion that these boards should be utilized for disputed cases only, as they felt that most cases arising under the Workmen's Compensation Acts were settled without trouble by mutual consent between employer and workmen.

The proposal of the Departmental Committee to make these medical boards responsible for the management of cases throughout their whole course is a striking departure from the procedure of the last thirty years. This proposal sets up State control of a section of the Workmen's Compensation Acts, the medical boards being elected and supervised by the Home Office. The duties of the boards will be to ascertain the extent of disablement and to advise the employer and workman when the latter is fit for work. The board will also supervise each case throughout and will call the men up for periodic re-examinations. There are obvious objections to boards consisting of two members, but it is probable that the

question of expense and the greater difficulty of arranging meetings determined the findings of the committee. It will be difficult to constitute these boards throughout the country, and much care must be given to the selection of personnel. Difficulties of administration are also likely to be great, and there will almost certainly be some delay in dealing with references. The expense of these boards is to be met by fees from the industry and a contribution from the Exchequer. There is at present no definite scale of fees laid down as suggested in the B.M.A. report. All men must appear before the board, and the only medical evidence allowed in a county court is a report from the board. The committee hopes that only exceptional cases will proceed to legislation.

Use of the Cap-lamp

The committee realizes that the best way of coping with the disease is by preventive measures, and they urge the more extended use of the cap-lamp (over 80,000 of which were in use in June, 1937) as the best means of attaining the upper standard of 0.25 foot-candle on the working area advised by the Miners' Nystagmus Committee in its Third Report (M.N.C. Third Report, Medical Research Council, Special Report Series No. 176, p. 8). Recent mining regulations have brought into use improved lamps (Coal Mines General Regulations (Lighting), 1934; S.R. and O., 1934, No. 562). There has in recent years been a welcome fall in the number of new cases certified, and if this fall continues the collieries will be able to absorb all partially disabled men. The provision of suitable work for such men has been strongly advocated for years by all medical authorities, and the committee is to be congratulated on obtaining pledges from the colliery owners that this work will be found if possible. The problem is economic rather than medical. The number of men now employed on the surface has been greatly reduced by the introduction of labour-saving machinery, and with the best will in the world it may not always be possible for the owners to provide work in all cases.

Definition of Nystagmus

The alteration in the definition will be generally welcomed, and it is probable that the number of fresh cases will fall. The old loose definition was an anomaly, and was the chief cause of the diversity of medical views referred to in para. 68 of the report. No fresh case of miners' nystagmus should have any difficulty in passing the test laid down: definite oscillation for fifteen seconds after stooping exercises in the dark. In the past many cases were certified on the strength of a single flicker. Most cases of miners' nystagmus are managed by the large mutual indemnity companies, whose individual members are generally responsible for the first twenty-six weeks of the cost. The report suggests that the whole of the employers' liability in respect to miners' nystagmus should be covered by insurance. The question of susceptibility to attack has led the committee to recommend that young men severely affected by miners' nystagmus before the age of 30 should be suspended from underground work by the medical boards. This was also a recommendation of the B.M.A. committee.

The Question of Re-employment

The liability to recurrence has made it almost impossible for men to obtain re-employment underground with other employers, and has been the cause of much litigation in the higher courts. The report lays down the simple rule that if a man who has suffered from miners' nystagmus obtains work with another employer the original employer is liable if breakdown takes place within three years. If failure takes place after three years a fresh certificate is necessary and the case is regarded as a new one. To encourage employers to re-engage men it is suggested that an insurance pool should be established in each coal-field to cover the entire liability for miners' nystagmus. The owners would then only have to pay their subscription to the pool. The simplest way out of the difficulty would be to forbid any man certified as suffering from miners' nystagmus to work underground again. This would entail great hardship on men who have only one occupation and who are incapable of adapting themselves to other work. The aim should be to improve the working conditions, and all that may be necessary in individual cases is the provision of a cap-lamp. Although the number of men employed in the industry has fallen in recent years by one-third, there is still a shortage of skilled colliers, the class of men chiefly affected.

Elsewhere in this issue is a suggestive paper by Dr. Raymond Brock of Wrexham, to which the reader is referred for a discussion as to the causes of miners' nystagmus. Dr. Brock thinks that failure is caused by a breakdown of the man's ability to stand the stresses of the mine—poor illumination and danger. In his view disability, when it arises, is due to an associated psychoneurosis. In a large number of cases disablement is entirely due to ocular movement, and the man is otherwise well. In others the symptoms which Dr. Brock describes appear either at once or after a period of unemployment, and may be correctly described as due to an associated psychoneurosis. Other men come out of the pit with well-marked anxiety neurosis and no oscillation. In the B.M.A. report the considered opinion is given that these men should not be considered cases of miners' nystagmus, and that the continued payment of compensation in these cases perpetuates in the mind of the sufferers, and of the medical men who are asked to certify them, a false conception of the disease. The Departmental report recognizes this type of case and expresses the hope that the change of the definition will eliminate them. These cases have been largely responsible for the difference of opinion, and it will be the duty of the medical boards to educate both workmen and medical men to a truer conception of this disability.

Cases Other than Miners' Nystagmus

The second part of the report deals with medical procedure in cases other than miners' nystagmus. The medical referees are to remain, with their numbers strengthened by the inclusion of more specialists. Appeals may be made from the medical referee to "medical appeal tribunals," which bodies are to be set up by the Home Office in ten or twelve large centres. The right of the employer and workman to arbitrate on medical issues is to be withdrawn, and these issues are to be settled by the tribunals alone. The certifying surgeon is to function as before, and the tribunals are to consist of three members, one of whom is to be an appropriate specialist. One very important recommendation is that approved societies are to make advances of sickness benefit to workmen while they are awaiting a decision as to their claim for compensation.

Part 3 deals with lump-sum settlements, and the report says that these settlements are generally popular with both employers and workmen and that as a rule they are used to advantage. They should be subject to the approval of the registrar, who should see each man and obtain a report from the medical referee if necessary.

Expected Beneficial Results

If these recommendations receive Parliamentary sanction, what benefits are to be expected? Disputed cases will be settled away from the disturbing influence of the courts. The system of reference will be greatly strengthened, and the aggrieved party will have the right of appeal to a strong medical board, except in cases of miners' nystagmus, which will be dealt with by a board from the first. The moneys formerly expended in litigation will, or should, be more profitably devoted to the rehabilitation and training of workmen. A strong lead is given to the prevention of miners' nystagmus by the insistence on good underground illumination. The reversion to the old description of the disorder—"miners' nystagmus"—and the standard of incapacity laid down will be a safeguard against the certification of cases not

due to industrial disease. Above all, the report, by "the elimination of a hopeless dependence on compensation by provision of work . . ." (quoted, in para. 101 of report, from the Third Report of the Miners' Nystagmus Committee), holds out hope for those partially disabled men who, from being unemployed, become unemployable.

It will be a matter of congratulation to the Council and members of the British Medical Association that the findings of the Departmental Committee follow so closely the recommendations of their own committee. The Departmental Committee has done its work well, and has put forward valuable recommendations which will simplify the workings of the Workmen's Compensation Acts.

THE NEW MATERNITY SERVICES

ADDRESS BY SIR COMYNS BERKELEY

A new maternity home was opened at Hull on February 15, having as its object the service of middle-class women. The home is an adjunct to the Hull Hospital for Women and is named after Dr. Ethel Townsend, a Hull practitioner, who gave £5,000 towards the cost of the building. The opening ceremony was performed by Sir Comyns Berkeley, chairman of the Central Midwives Board, who took occasion in an address to pass in review the maternity services of the country in the light of recent developments, dealing first with the question from the point of view of poor mothers, then from that of the medical student, the future family doctor, and finally from that of women who were neither poor nor very well-to-do.

Sir Comyns Berkeley began by relating the circumstances which led to the passing in the early part of 1936 of the Midwives Act, following upon the Ministry of Health report on maternal mortality. Even before the passing of this Act, he said, some very valuable services were available to the pregnant woman if she cared to avail herself of them and if local authorities exercised their powers to provide them. But the new Act might be described as the "mothers' charter." It made provision for a domiciliary service of full-time salaried midwives, care being taken in the establishment of such a service that the most suitable women were attracted to this field, that their conditions of employment, with reasonable salaries and holidays, enabled them to give of their best to their patients, and that their skill and knowledge were maintained at a high standard.

In the past the midwifery service (said Sir Comyns Berkeley) had not been all that could be desired; many midwives had lacked sufficient practical experience to ensure that they were well up in their work. But the new Act had resulted in the resignation (with monetary payment) of a large number of women who were too old to continue in practice or who attended only a very few cases in the year. At the same time arrangements had been made for refresher courses for all midwives continuing in practice. One of the most important suggestions made by the Minister in the report on maternal mortality was that there should be expert obstetricians available for consultation with the doctors in each district. In towns where there was a maternity hospital or department of any size it was important that what was known as a flying squad—an expert obstetrician and qualified obstetric nurse—should be attached, in readiness for summons, with the necessary equipment, to the home of a patient who could not be moved. It would be left to the local medical profession and the local authorities to ensure that the best obstetric skill was available, and he was confident they would not be found wanting.

Medical Students and Midwifery

With regard to the medical student (Sir Comyns Berkeley continued) it was well known that for many years past medical students had been starved of experience in practical midwifery owing to the fact that the General Medical Council had not stipulated for a period of training in that subject comparable to that on which it had insisted in medicine and surgery, and also to the fact that there were not sufficient cases for the student to obtain an adequate training. The General Medical Council stipulated that before he could enter his final examination the student must have attended and delivered twenty women in labour. The Central Midwives Board had had the same regulation for pupil midwives, but there had been this difference, that whereas the Council had to wink at its regulation because there were not enough cases for the students, the Board rigidly refused to allow any pupil midwife to enter for its examination until attendance on twenty cases had been certified. Several of the teaching hospitals which trained also pupil midwives had given these women their twenty cases, allotting the remainder—not many—to the medical students. But 70 per cent. of the women on the midwives' roll never practised as midwives: they took the Board's diploma as an extra qualification.

The Board had now come to the rescue of the General Medical Council by refusing to give separate approval for the training of pupil midwives to any hospital which trained medical students unless and until those students had had twenty cases each or as many as were available short of that number. Moreover, the training of midwives under the new rules was in two parts, the first of these including thorough instruction in all branches of midwifery but with attendance on only ten labours. It was hoped that this would satisfy nurses who wished to receive some training but did not intend to practise midwifery, and many more cases would thus be available for medical students and for women who contemplated practising as midwives.

Needs of the Middle-class Mother

Finally, Sir Comyns Berkeley turned to the needs of the middle-class mother. She belonged, he said, to the section of the community which was worse off as regards maternity services. It was true that under the new Midwives Act any mother, whatever her circumstances, could obtain the services of a salaried midwife, or of a maternity nurse if she was attended by her own doctor, at a very reasonable fee. Nevertheless the accommodation for their confinement was to many of these women an embarrassing question. They did not wish to enter the maternity ward of a hospital, a nursing home was expensive, and their own home, perhaps a small flat, was unsuitable. Some hospitals had private maternity wards, and in a few the prices were reasonable and the family doctor could have charge of his patient. But there was very great need in every district of any size for properly equipped maternity homes or departments at which reasonable fees were charged, and at which the patient's own doctor could provide the attendance. He added that the citizens of Hull might well feel proud of this further improvement of the maternity services of their city, and they with the medical practitioners of the district would be deeply grateful to Dr. Ethel Townsend for her munificent benefaction.

Special Report No. 45 of the Food Investigation Board of the Department of Scientific and Industrial Research is entitled *Microbiology in the Preservation of Animal Tissues*. The author, Dr. R. B. Haines of the Low Temperature Research Station, Cambridge, regards the successful storage of animal tissues as an exercise in applied microbiology. The report is divided into three parts. Part I deals with the access of bacteria to the tissues; Part II with aspects of the physiology and biochemistry of bacteria and of the tissues of the host; and Part III with the control of infection and growth. Two appendices describe methods and apparatus employed, and the report concludes with a very full bibliography, comprising 261 references.

PROFESSOR SIMON FLEXNER AT CAMBRIDGE

LECTURE ON EPIDEMIC POLIOMYELITIS

Professor Simon Flexner, formerly director of the Rockefeller Institute for Medical Research, visited Cambridge on February 21 and lectured in the physiological department to a large audience, which included the Regius Professor of Physic (Professor J. A. Ryle) and Sir F. Gowland Hopkins. He was introduced by Professor E. D. Adrian. Professor Flexner took as his subject epidemic poliomyelitis or infantile paralysis, and at the end of his lecture dealt much more briefly with epidemic encephalitis. He said that he was led to speak on these two diseases because America had been the victim of them—especially of poliomyelitis—on a scale exceeding that of any other country. The two diseases were different in this respect, that poliomyelitis was one disease and encephalitis was not. How many kinds of epidemic encephalitis there might be was not known, but there were certainly two, and there might be more.

Landmarks in History

In briefly sketching the history of research in poliomyelitis Professor Flexner first mentioned the name of Jacob Heine of Kronstadt, who was the first to attribute infantile paralysis to a spinal cord affection. He was led to make a systematic study of the disease by reading a report of four cases by a practitioner of Worksop in England. Heine wrote a well-known book on the cases he had observed, which was published in 1840. Many years later Wickman suggested that the disease be called "Heine-Medin'sche Krankheit," and it was under that name that references appeared frequently in Continental literature. Wickman himself investigated an outbreak of 1,025 cases in Sweden in 1905, and in many ways the modern knowledge of the disease dated from Wickman's studies. The epidemic flourished in the remote and isolated parishes of Sweden, and Wickman was able to trace the movements of many of the children attacked and reached the conclusion not only that the disease was infectious and that it affected much more than the central nervous system but that certain varieties of it could be distinguished. He discovered also that the infection passed, not from children who were actively sick, but from slight cases which would never be suspected of the disease if they did not occur at the same time and in the same families as the paralytic form of the complaint.

By 1908 the disease had spread widely to other parts of Europe, and cases were occurring in the United States, on the Atlantic seaboard, where immigrants landed from Europe, and in Minnesota, where there was a large Scandinavian population. In 1909 at the Rockefeller Institute spinal cord was obtained from two fatal cases, and it became possible to accomplish animal-to-animal inoculation. One of the individuals who furnished this material had the initials "M. A.," and this accounted for many references in world literature to "M. A." or sometimes "M. V." This indicated the original virus, which was isolated about thirty years ago and which had been continuously passed from monkeys ever since. The filterable nature of the virus was established about 1910.

Mode of Infection

Once the filterable nature of the virus was discovered all the discharges from the body were examined with a view to detecting its channel of egress. By filtering the discharges and inoculating the filtrates, freed from all bacteria, into the monkey, it was discovered that the virus was present only in the discharges from the upper respiratory tract. No particular skill or imagination was required to try the reverse experiment and to discover whether the virus also entered by the nasopharynx. It was soon found that it was necessary only to get a suspension of the virus into the nose and the disease developed. By a suspension of the virus he meant merely a portion of the spinal cord of the paralysed monkey suspended in solution and dropped into the nose.

The study of the manner in which the virus entered through the nose had opened a new chapter in pathology. It was quickly determined that it entered directly through the olfactory areas in the nasal mucous membrane. These were portions of the central nervous system having a peripheral location. Protruding into the cavity of the nose were hairs or receptors, perfectly free except to the extent to which they might be covered with mucus. When the virus was introduced into the nose it attached itself to these hairs and to the first line of olfactory cells immediately adjacent, and very quickly passed from these hairs and cells by way of the olfactory nerves through the axons to the olfactory lobe of the brain. It was important to bear in mind that owing to its portal of entry and means of discharge poliomyelitis fell into the class of upper respiratory infections. It was important because of the problems and difficulties surrounding the prevention of the diseases which had that origin. Poliomyelitis was therefore just as difficult to prevent as colds or pneumonia, which had the same mode of infection.

Prevention and Specific Treatment

The lecturer next turned to the efforts which had been made in the United States within the last year or two to bring about artificial immunization. Ever since the epidemic disease appeared in America every summer and autumn there had been outbreaks in one State or another or in Canada, and the number of children affected and left paralysed was so great that it was natural to direct every effort to prevent the disease. Two attempts were made, one in New York with a vaccine consisting of the virus to which a certain amount of formalin was added, and in the other a similar material was used, sodium ricinoleate being the addition. These vaccines had been used quite extensively, but both had been given up, the former because there was no particular evidence that it produced the immunity principle and the other because the indications were that it accidentally produced in certain sensitive children the disease itself. The peculiarity about all virus diseases was that, so far as was known, in no case would the virus produce an active immunity in the dead state. This was in sharp contrast to bacterial diseases. Bacteria grew on media which contained no living cells, but no virus would grow on dead materials. The virus was strictly cytotropic—that is to say, it required cells to which it attached itself in order that it might multiply, and unless the virus was alive it had no power of multiplication and no power to give immunity.

It was this requirement of a relationship between the virus and the living cell which determined the occurrence or non-occurrence of immunization. As the living virus of poliomyelitis could not be safely used for vaccination it did seem that for the time being the way was blocked for the artificial production of active immunity to the disease. Some degree of immunity could be produced by means of a mixture of the living virus and immune serum. The serum, which neutralized the virus, did not actually destroy it. The dissociation between the immune material and the virus could be made to take place outside the body, and it undoubtedly also took place in the body. A small amount of immune material carried in by the serum seemed to hold the virus in check, so that in those circumstances the disease was not produced. Unfortunately, however, the amount of immunity thus conferred was low.

Possible Blocking of Path of Ingress

The failure to produce active protection in this manner had led to another approach to the subject. The effort was made to block the passage of the virus along the path of the olfactory nerves. This work was begun with

the use of guinea-pigs and the virus of equine encephalomyelitis, these animals not being subject to poliomyelitis. It was discovered that the virus in this case used the same path in order to ascend to the brain.

The work carried out along these lines began by dropping a solution of tannic acid into the nose of guinea-pigs. Tannin had the property of coagulating albumin, and thus a layer of coagulated albumin was formed over the olfactory hairs. If the interval was not too long this layer of tannic precipitate excluded the virus, and whereas 100 per cent. of the animals would die if not so protected, few or none of them died during the few days for which this protection lasted. This led immediately to an effort to block the passage in monkeys, and a very considerable number of chemicals were tried. The one most successful was a 1 per cent. solution of zinc sulphate, which gave a protection lasting two or three months after the instillations had ceased.

The difficulty encountered in the human being was that the middle turbinate bones deflected the fluid, so that it did not pass over the olfactory mucous membrane. It became necessary to devise special atomizers for the purpose and to watch the process with a mirror. This was a performance requiring special skill, and not to be roughly improvised during an epidemic. The zinc sulphate solution, which was so mild that it did not hurt the conjunctiva, was painful when applied to the olfactory mucous membrane, but this disadvantage was overcome by procaine.

Last summer during an outbreak of poliomyelitis in Toronto an effort was made to test the zinc sulphate application. The report stated that nearly 5,000 children were sprayed twice by forty-four oto-rhino-laryngologists in eight hospitals, and about 6,000 controls were taken. Among the 4,713 children who were sprayed twice eleven cases of poliomyelitis occurred, and in the control group eighteen cases, a rate of 2.1 per cent. and 2.9 per cent. respectively, the difference not being statistically significant. Moreover, the way in which the applications had to be made practically excluded the method from ordinary public health practice. That was the present position in respect of immunization to poliomyelitis.

Second Attacks of Poliomyelitis

In 1930 Still drew attention to the occurrence of second attacks in previously paralysed children. He collected nine or ten cases, and others had been reported. It was possible with monkeys to experiment with second attacks. Although poliomyelitis was not a natural disease in monkeys, when it was given to them artificially they were more severely affected than humans. The mortality among monkeys was about 90 per cent., which was far higher than the mortality in man. When the monkeys recovered—and a certain number by careful nursing could be made to recover—they had residual paralysis of a crippling character, just the same as human patients. A number of these monkeys were studied with reference to the possibility of second attacks.

It must be remembered, Professor Flexner pointed out, that when a disease was produced experimentally the methods used, as compared with what took place naturally, were rough; in other words, nothing comparable to the dropping of a suspension of filtered virus into the nose of monkeys occurred even under the worst conditions of an epidemic in human beings. Thus it was found that second attacks could be produced in monkeys much more numerously than in any circumstances one could imagine to occur in children. But what happened in the monkey was precisely what happened in the human patient. The process was the same, although the incidence might be very different. The virus, using the channel of the nervous system, entered the axons and extended widely. Any parasitic material thus introduced had an enormous advantage over the ordinary defence mechanisms, even when these were efficient, and in the monkey experiments the virus passed by means of these nerve structures in the same manner whether or not the animal had had the disease previously. Thus a relatively high percentage of second attacks was recorded in monkeys. If the process was studied carefully it would be found that very soon after the virus was dropped into the nose a reaction would take place in the cerebrospinal fluid. This reaction consisted of a rapid increase in the number of cells. The increase began within forty-eight hours, and continued rapidly to quite a high level. This was of interest because the virus of poliomyelitis itself never entered the cerebrospinal fluid, at least it had never been found to do so, either in man in the natural disease or in the monkey artificially inoculated.

On the general subject of second attacks, it was supposed that such an attack in poliomyelitis never occurred at all. But there was no infectious disease, whether of bacterial or virus origin, no matter how strong the immunity, in which second infection did not exceptionally occur. It was only very recently that something had been learned about reinfection in poliomyelitis.

Epidemic Encephalitis

Professor Flexner added a few remarks on the subject of epidemic encephalitis, which appeared in this country in 1918 and in America a year later. It was originally described in 1917 in Vienna, and often went by the name of lethargic encephalitis or sleepy sickness. In the summer of 1933 about 1,000 cases occurred in Missouri, mainly aggregated in St. Louis, where the attack rate was about 1 per 1,000. It was quickly determined that this was a virus disease. At first it was transmitted to monkeys, and then after a little experimentation and the selection of particular strains of mice it was successfully transmitted to mice, an enormous advantage from the experimental point of view. A great deal had been learned about the disease as a result of the epidemic in Missouri. This type of encephalitis, known as the St. Louis type, was immediately recognized as having similarities with the encephalitis which was very prevalent in Japan, where about 7,000 cases were reported, some years earlier.

The question was whether epidemic encephalitis in the United States was the same as the Japanese disease. Plates were obtained from recovered cases of the Japanese disease and tested against the virus of the St. Louis disease, and Japanese workers had also made experiments in the reverse direction. It was shown that the two diseases were distinct, though this did not mean that they had no relationship. It meant only that the two particular varieties, the one causing the Japanese disease and the other the St. Louis, were distinguishable immunologically. In spite of all the obstacles to the production of immunity, natural or acquired, in animals or man, an impression of a sort was made on the structure of the nervous system. Something happened there—nobody knew what—which rendered that system less subject to reinfection with the same type of organism as that by which it was originally attacked.

Professor Flexner concluded with a quotation from Dr. Theobald Smith, an eminent American microbiologist, who wrote that "humility of spirit should hover over our undertakings. In nature everything is molten, living things are changing, nature is everywhere trying hundreds of experiments. . . . Out of this trial and error method come new diseases or new adaptations of existing ones." It was of great interest to note that before 1905 there was no historical record of poliomyelitis as an epidemic disease on a world-wide scale, and there was no historical record of the disease encephalitis lethargica which could be recognized at all.

*** Owing to the time of going to press, Professor Simon Flexner was unable to see a proof of the above report of his lecture at Cambridge.

Reports of Societies

MEDICAL ASPECTS OF DECLINE OF POPULATION

At a meeting of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine on February 18, with Professor MILES PHILLIPS in the chair, a discussion took place on the medical aspects of the decline of the population.

Multiple Causes of Declining Fertility

Professor A. M. CARR-SAUNDERS, in opening, said that in many countries of North-West Europe the decline had been in the neighbourhood of 50 per cent. within the last sixty years or so. It was clear that there might be many causal factors operating at the same time, and he proceeded to a classification of them. The first was a possible decrease in the natural capacity for child-bearing, meaning by "natural" an inherited capacity. It was conceivable that less fertile varieties might become more numerous either by selection or mutation. At the same time he could not think that this kind of cause had been seriously operative within the last two or three generations. The second possible cause was a decrease in intercourse, including decline in marriage and restriction in the frequency of intercourse between married persons. There had been a tendency to more rather than to less marriage during the period of declining fertility, but as to frequency of intercourse there was, of course, no direct information. The third factor was that, while intercourse occurred, conception did not follow either by reason of contraceptive measures or consequent upon certain physiological conditions. It was possible that modes of life might have altered during the period in question, and that the conditions had become such that conception followed intercourse less frequently than in a former time. The fourth possible factor was that while intercourse was followed by conception no living births took place by reason of either abortion or miscarriage, and again either deliberately or consequentially upon changes in the mode of life. He contented himself with stating the possible factors, leaving others to discuss their relative importance.

Statistics of Childless Marriages

Dr. R. R. KUCZYNSKI said that the number of childless marriages in England was not known, and even if it were known most people believed that the proportion of voluntarily childless marriages could not be estimated. That, however, was a mistake. The number of involuntarily childless marriages was so small that if there were adequate statistics of all marriages which had no issue it would be possible to estimate the number of voluntarily childless. The proportion of wives marrying under 30 who remained childless could be estimated for those who married in England between 1896 and 1901 at 8 per cent., for those who married in Norway between 1921 and 1924 at 8 per cent., and for those who married in Germany between 1924 and 1926 at 16 per cent. In Germany, according to the census of 1932, 10 per cent. of the women who had been married for from ten to fifteen years and whose age on marriage was below 25 remained childless, and in German statistics the "childless" women did not include those who had had a stillborn child. Assuming that in each of the cases just quoted the proportion of involuntarily childless wives was 5 per cent., the proportion of voluntarily childless women among the fecund women who married under 30 would have been about 3 per cent. for England and Norway and about 12 per cent. for Germany. In France the proportion of childless marriages seemed to be about as low as in Norway, while in Austria it was apparently much higher than in Germany. Whether in England the proportion of wives marrying under 30 who remained childless was still 8 per cent. or 16 per cent., or even 24 per cent., it was impossible to say. It would also be a mistake to think that a few years hence, when the first statistics based on the records obtained under the new Population (Statistics) Bill would be available, much more would be known about childlessness in this country. The statistics should be supplemented by triennial or quinquennial fertility censuses, the first of which ought to be taken within a year.

Medical and Eugenic Deterrents

Dr. C. P. BLACKER, secretary of the Eugenics Society, said that the medical causes of declining fertility could be divided into three groups: (1) sterility in men and infecundity in women, giving rise to the incapacity to conceive; (2) various degrees of ill-health in men or in women, giving rise to a disinclination to have children; and (3) various abnormalities which might cause a miscarriage. The medical student was brought up to consider the various contraindications to pregnancy in women, and the deterrents in men were overlooked. Moreover, in women it was mainly the grave disorders imperilling the life of the woman, such as cardiac or renal disease, which were considered, and the minor degrees of ill-health, which though seldom acting as a single deterrent played an important part along with other deterrents, were forgotten. In any remedial measures taken with a view to stimulating fertility some would have to be included which had for their object the safeguarding of the health of the woman and offering facilities for the treatment of minor disorders—such, for example, as varicose veins. So far as men were concerned, ill-health or physical abnormalities had an important effect in determining the economic attitude towards procreation. These health reasons were particularly operative when the occupational stability was threatened.

The relative effect of the various deterrents was difficult to evaluate. Much was made in the Press of the "cannon-fodder" argument. This argument was very likely to be brought forward on first asking the woman about the reasons why she was disinclined to have more children, but subsequently, after she had discussed the matter with her husband, it took a very much smaller place among her objections, and was nothing like so important in general as the newspapers made it out to be. Eugenic deterrents must not be overlooked. In perhaps nearly all pregnancies the thought occurred to the prospective mother, "Supposing the child were deformed or defective." Some of them would take almost fantastic measures to protect themselves against "psychic trauma." In families where a hereditary abnormality was known this anxiety might be exalted into a positive deterrent, and it was possible that a misplaced eugenic zeal at the present time was seriously operative. In the majority of such cases in which he was consulted he had been able to counsel the prospective parents, after looking at both of them and into the family history, to take the risk. After all, if every pedigree were examined few people might be inclined to have children. Every family had genetic skeletons in its cupboard, and it was not well to be over-sensitive. Dr. Blacker mentioned that a questionary had been designed by the Population Investigation Committee, of which Professor Carr-Saunders was chairman, and it was hoped that this would be of use to the medical profession in giving guidance in these cases.

Medical Causes of Inherent Sterility

Mr. EARDLEY HOLLAND, in discussing the medical causes of inherent sterility and their relative importance, said that if one hundred couples married and had regular intercourse without the use of contraceptives the results might be predicted as follows: in a minority pregnancy would occur immediately; in a majority it would occur after a variable period of delay from a month to a year; in a few cases it would be delayed for a longer period, perhaps

for years, and about ten couples out of the hundred would remain childless. Absolute fertility meant physiological perfection, a state which was common in animals, but human beings in comparison with animals were poor breeders, relatively but not absolutely fertile. In matings of high fertility in human beings pregnancy occurred promptly and repeatedly, even in spite of all contraceptive precautions, but if the fertility of the mating was average a desired pregnancy could easily be accomplished within a reasonable time and an undesired one prevented by contraceptives. This conception of relative fertility as applied to human matings was a comparatively new one and had done a great deal to clarify the whole subject.

In the causation of infertility a number of infertility factors of major and minor importance were recognized. The investigation of a childless marriage entailed an exhaustive examination not only of each partner but of the sum total of infertility factors found in both. The usual problem was not that of one sterile and one fertile partner, but rather of two individuals, both of whom exhibited some degree of infertility. Meaker in the United States had found in one hundred cases of sterile marriage 481 infertility factors, one-third of them on the male and two-thirds on the female side. In the experience of most of them, in about 40 per cent. of sterile marriages the semen showed some obvious defect, though such a finding was no justification for fixing the blame exclusively on the husband, because in most cases the wife also exhibited some infertility factor. The male factor might be defective spermatogenesis or some blockage in the male genital tract. Of these the first was the more important. It was due to constitutional causes which in the male preponderated over the local ones. Among them might be mentioned pituitary or thyroid dysfunction, malnutrition, and alcoholism. The female factors might also be divided into constitutional and local. Far too much importance was attached as a local factor to tubal occlusion, which he had not found in more than 10 per cent. of cases. Genital hypoplasia or failure of complete development of the reproductive system was by far the commonest cause of sterility in the female. It was a common estimate that 30 or 40 per cent. of all sterile women showed stigmata of genital hypoplasia. The tragedy about this condition was that medical advice was sought too late in life. If a girl did not menstruate regularly and normally before her fifteenth birthday her general health and endocrine functions should be investigated. If the delay extended to her sixteenth birthday the matter was really urgent. The aim of the members of the medical profession should be to detect the candidates for genital hypoplasia even before they reached the age of puberty. In Italy Mussolini had already established centres for hormone investigation of this sort, especially with a view to detecting incipient hormone defects.

Influence of Changes in the National Diet

Professor J. C. DRUMMOND discussed the changes in the character of the national diet with their bearing on nutrition, and possibly on fertility, having in mind the likelihood of a shortage of vitamins B_1 and E. The latter vitamin was known to play a very important part in the reproductive cycle. No fallacy was more widely held than that a mixed diet afforded protection against all forms of dietary deficiency. The vitamins were quite erratic, and it did not necessarily follow that with a mixed diet one was making good the deficiencies of one food with the adequacies of another. If a list of common foodstuffs were made curiously few of them would be found to be rich in vitamin B_1 or E, but there was one food in which they were both present to a considerable extent—namely, the germ of most of the cereals. If as he imagined, the decline in the population first became apparent about fifty or sixty years ago, the period did coincide with the change-over from wholemeal to white bread, which occurred very rapidly as a result of the introduction of the roller mill. The removal of the germ which the new process made possible brought about in less than thirty years a sharp fall in the amounts of these vitamins in the everyday diet. For example, the intake of a poor person living largely on bread fell from about 800 international units daily to about 250. He considered it possible that the introduction of white germ-free breads had been in part responsible for lowered fertility.

The Part Played by Abortion

Professor J. YOUNG said that abortion and contraception were generally believed to constitute the effective influences in the declining birth rate. In a survey of gynaecological cases Beckwith Whitehouse found a history of 1,972 abortions in 11,430 pregnancies (17.2 per cent.). This estimate, however, was overweighted by the nature of the clinical material with which he had to deal. In a survey of the reproductive history of 365 women in a medical unit there were 137 abortions in 1,265 pregnancies (10.8 per cent.). From a medical standpoint abortion was sharply divided into two separate entities: criminal or intentional, and spontaneous or pathological. There were no accurate data with regard to the relative proportion of these. Raymond Pearl, after an investigation carried out in Chicago and New York, declared that current statements about the frequency of criminal abortion considerably exaggerated any conclusion that could be supported by critical scientific evidence. In England and Wales over the period 1928–35 there was no evidence in the Registrar-General's figures of any appreciable increase in the mortality from abortion, but the returns of the Ministry of Health, obtained in a different manner, showed a rise in mortality of nearly 80 per cent. in five years. Criminal abortion was to be regarded as a problem more for the sociologist and the publicist than for the doctor. As for spontaneous abortion, this was of the greatest importance to the medical profession in that there was increasing evidence that it arose in a significant degree from factors which were controllable. From two sides there was evidence that dietetic factors might be concerned—namely, the success obtained in investigations on vitamin E and the high proportion of developmental defects found in aborted ova of such a kind as might be ascribed to nutritional deficiency.

Economic Factors

Sir LEONARD HILL remarked on the ageing of the population in this country, the decrease in the number of children, and the greater longevity of old persons. For many years now all the energy had been put into the prevention of death, not into the production of young life. Probably by making people live to a greater age the fertility of the race was being reduced. Birth control undoubtedly was at the bottom of the diminution of the birth rate. There were shops in every street selling contraceptives. Books had been written in popular form making the methods of birth control familiar to all young people. He urged the medical profession to appeal to statesmen to apply at once the methods used with success in Germany and Italy, including family allowances, given both in additions to wages and reduction of tax, dowries for marriage, bonuses for children, the establishment of crèches where mothers could leave their children, the removal of all disabilities attaching to illegitimacy, and the prohibition of the inclusion among conditions for employment that the candidates must be unmarried. "The writing is on the wall, and in the far distance the vultures are getting ready to swoop down on dying England."

The PRESIDENT (Professor Phillips) said that among his private cases he had noticed in the course of years an increase in the number of consultations on account of sterility. Thirty years ago the proportion of such cases to the total consultations was 0.8 per cent.; the last figure was 6.6 per cent. One fact which gave ground for apprehension, to his mind, was the increasing number of cases

of people who had been married for from three to five years and had practised various methods of contraception and had then discovered that conception when desired did not occur. The use of contraceptives was often associated with disturbance of the menstrual function. While he could see the advantage of contraception and the spacing out of births, nothing would prevent him advising the newly married couple to have their first baby as soon as possible. One consideration not often regarded was the cost of childbirth for that section of the community among whom a higher birth rate was most desirable. He suggested that the obstetrician might charge a diminishing fee for each successive child in a family; he had even made a "sporting offer" to attend the fifth child for nothing. Childbirth must not only be made safer but cheaper.

Many Opinions

Mr. J. M. WYATT, on the dietary question, pointed out that Germany ate wholemeal bread, and yet according to the figures that was where there had been the greatest fall in fertility. Dr. G. ALABASTER also asked how it was, if the wheat question was so important, the Eskimos had not "faded out." Dr. BINNIE DUNLOP said that in this country the statistics showed that the birth rate had fallen principally among those who had always enjoyed a liberal diet.

Dr. J. M. BRYDONE quarrelled with what had been said about medical causes of declining fertility. It was unwillingness to bear children, not incapacity, which was at the root. The vast majority of couples wished to have one or two children, but not more. Medical reasons for not having more did not exist so far as they were concerned. The difficulty was financial. They did not want to have such a number as would lower for their children their own level of upbringing.

Mr. ALECK BOURNE questioned whether the measures adopted in Italy and Germany were genuine in their effect. They might result in a temporary increase of the birth rate in respect of families where it had been intended to have more children had passing economic circumstances not been adverse, but he doubted whether they would have a permanent effect. He could not discover any evidence that contraceptive measures during the early years of marriage were the cause of sterility. He thought this suggestion to be rather like the ogre which the nurse shook in front of the naughty child. He could not see why defective ovulation, which was the chief cause of female sterility, was likely to be increased as a result of the use of contraceptives. One real trouble was that of housing, also the trend of social custom, which was all opposed to the bearing of children. The income of the family was mortgaged to pay for instalment purchase of the house, the car, the piano, and perhaps the perambulator for the first and only baby. No one had mentioned the chief cause of all why the birth rate was falling—because the women of to-day wanted to have a better time than to spend the whole of their lives in pregnancy and lactation.

Dr. B. P. WIESNER suggested that a greater effort might be made to reduce the incidence of miscarriage, and pointed out that if this were done it might have important social consequences. It would not only save children who would otherwise remain unborn, but it would reverse the sex ratio, for the proportion of males was much greater than females among children who would have been born but for miscarriage. Instead of slightly over 100 male births to 100 female there might, if more energetic measures were taken to prevent abortion, be 130 or 140 boys born to 100 girls. Dr. G. F. MCCLEARY pointed out that in France the population began to decline long before it did in England. He was a little sceptical of the stress laid on housing conditions as a factor, and pointed to the extraordinary variety of sociological conditions obtaining in countries where fertility had fallen. It illustrated the danger of premature conclusions.

One speaker had been interested enough to look up the families of 100 recently deceased persons who had left large fortunes. The fortunes left amounted on the average to over £300,000. One-third of these people had hereditary titles, so that there was a special encouragement to maintain the family. These 100 persons had produced only 233 children—2.33 per married couple. Dr. E. STOLKIND remarked on the relative lack of fertility among doctors and clergymen. Dr. COOPER, who had used the questionary prepared by the Population Investigation Committee, said that among 300 married couples he had investigated only three gave as a reason for not having children the "cannon-fodder" argument. Very many of them were chiefly concerned that their children should have a good opportunity, and preferred to do well for two instead of not so well for three. He had also been struck by the extent to which birth control measures were used, but again by the number of people, not only Catholics, who would not use them in any circumstances.

Another suggestion which came from the audience was that a reason for declining fertility might be found in a certain alteration of mating conventions, so that more women of a neurotic type and less likely to bear children were marrying, while women adapted to bearing children, again owing to change in mating conventions, were remaining spinsters. The point was also made that for the working-class population the economic advantages of having children had diminished; children were rather a liability than an asset; and the speaker suggested that this position would continue until the State endowed parenthood.

The last of some twenty speakers was Dr. LETITIA FAIRFIELD, who pointed out that the desire for children as an economic factor had been taken away, while the emotional desire for children was satisfied with a smaller number. She also expressed the hope that the methods of despair which Sir Leonard Hill had advocated would find no acceptance. What was not wanted was a Nazified nation or a community of children without fathers. It was at least as important to have an appreciation of the true values of parenthood and children as it was to have more children born.

EFFECTS OF STRAIN IN CHILDREN

At a meeting of the Section of Physical Medicine of the Royal Society of Medicine on February 18, with Dr. F. D. HOWITT in the chair, a discussion took place on the effects of strain in children.

Muscular and Ligamentous Strain

Dr. WILFRED PEARSON limited his remarks to muscular and ligamentous strain, foregoing the consideration of joint affections. He said that the effect of strain might be demonstrated by pain of a general or local character, or there might be no symptoms except those of fatigue. As strain and apparent rheumatism were so closely related it was necessary to consider the type of child who was specially prone to rheumatic pains and muscle spasm. Aches and pains in the limbs with indefinite ailing or debility, sometimes associated with repeated sore throats, were often termed cases of subacute rheumatism—a term apt to be misleading. There were three classes of cases to be considered: those in which there was some disease or intoxication other than acute rheumatism; those which at the time or later gave evidence of specific rheumatic infection; and those with no obvious association except that of variation with climatic conditions. "Growing pains" were most common in the leg, but they also occurred in the arms and around the abdomen and chest, often localized over the attachments of ligaments and muscles; the commonest age was between six and ten. In more than half the cases the pains were related to atmospheric changes; damp and draughty houses and residence in low-lying neighbourhoods along old watercourses also came into the category of predisposing factors. Sultry, thundery weather accentuated the pains, which were worse towards the end of the day, consequent upon fatigue. Although warmth alone could relieve many cases, some of the subjects endured worse pains after going to bed. The milder cases were usually relieved by sleeping between blankets. Most of the children in whom fatigue played a part were thin and debilitated. The fatigue element was most marked during periods of sudden and excessive growth, as between the sixth and eighth year and in the early 'teens. The part played by infection was difficult to assess. The throat at times might show general redness and dryness, but not necessarily indicating infection; these changes were possibly part of a systemic disturbance producing an alteration in the vascularity of the mucous membrane. Even in such cases, however, certain climatic conditions repeatedly induced a state of ill-health. On the whole it seemed that infection of throat

and sinuses played a limited part in aetiology. Certainly tonsillectomy usually failed to bring about any relief of the pains.

Was there a type of child specially susceptible to rheumatic pains and the effects of climate? Although leg and other pains of a more or less localized nature might occur in obese children, the large majority of rheumatic subjects were thin, highly strung, and nervous. When in good health these children were noticeably high-coloured. Capillary stasis was specially marked on exposed parts when the subject was in damp or cold surroundings. Reaction to the sun's rays was peculiar; the skin became erythematous, but did not pigment easily. Many so-called general limb pains if analysed proved to be in reality a collection of local pains due to strains of various origin; acute strains of the foot due to some unaccustomed exercise came into this category. Dr. Pearson concluded with a few remarks about postural deformities and abnormalities without pain but with hypotonic muscles as opposed to painful hypertonic cases.

Pain and Spasm in the Muscles of the Back

Dr. NINA KELLGREN, with the aid of a child subject, dealt with specific examples of cases in all these categories, discussing the nature of the physical signs and their causes and outlining treatment. Muscular and ligamentous strains in children often produced no symptoms other than general fatigue, and it was only in the more acute forms of strain that pain was produced. She discussed in particular pain with localized spasm of the muscles of the back. These cases were like those of fibrositis in adults. In children there was often an acute tender area in the neighbourhood of one or more of the spinous ligaments, with pains referred along the course of the anterior division of the spinal nerves, and some spasm or tenderness in the muscles close to the spine, with or without scoliosis. The muscular spasm was not always on the same side as the pains referred around the trunk. She believed the muscular spasm to be secondary, the primary lesion being the fibrous tissue closely associated with the spine. She never used an anaesthetic for mobilizing the child's spine; the manipulation was generally painless, and she had never made a child cry. She demonstrated these movements, showing how everything could be done with the application of practically no force at all. She drew attention to an article by Dr. R. G. Abercrombie in the *British Medical Journal* of January 29 (p. 215) on the pathology of adolescent scoliosis. Dr. Abercrombie's experience with adolescent girls was very similar to her own with younger children. She agreed with him that long-continued muscular contraction could produce postural deformities. Education in muscular relaxation was a very important part of the treatment of children with hypertonic muscles. They were highly strung and self-conscious children, who did not usually complain of pain, but were obviously sickly, and on undertaking passive movements there was a general resistance.

Faults of Posture

Dr. J. B. MENNELL said that the reason for much strain and breakdown was faulty posture. He directed special attention to the foot, calling attention to some common fallacies. Many people were considered to have flat-foot because when they put their foot on the ground they had no marked arch; in the Russian ballet every dancer had a completely flat foot in the rest position. In itself flat-foot was not a deformity, but it could become one when it was due to a short tendo Achillis. Much was heard about the anterior metatarsal arch. Was there such a thing? The metatarsal heads rested on the ground when walking. Dr. Mennell gave a demonstration of the mechanics of the foot. He asked was there any explanation of the osteo-arthritic hip except injury in younger days not adequately treated at the time? Any injury of a joint remaining untreated meant that later in life that joint might be ten or fifteen years older than the others. In discussing general fatigue little was said about the portal circulation. These tired and weak and worn-out persons, nine times out of ten, were lacking in adequate muscular tone in the portal area. There was, so to speak, a bleeding into the portal area, depriving other parts of their blood supply. The importance of elasticity in the very young child had been brought home to him when he attended for a slight injury one of a Lambeth family of acrobats. He learned that unless in that family a definite training began at the age of two the individual could never become a first-class acrobat. By the age of three elasticity had so much diminished that his chances in the acrobatic world were seriously qualified. The effect of concealed injury was illustrated in the case of a child who had been for months under psychological treatment for sudden and uncontrollable attacks of temper. At some earlier date she had fallen from a horse on to the head, and examination now showed that the joints of the cervical spine had been injured, so that on movement the child experienced pain in the back of the head and lost its temper. As a result of appropriate treatment of the cervical injury the whole psychological outlook of the child was altered.

DEEP X-RAY THERAPY

A discussion on "What can be expected of deep *x*-ray therapy" took place at the meeting of the Medical Society of London on February 14. Mr. J. E. H. ROBERTS presided.

Dr. J. H. DOUGLAS WEBSTER reviewed the various non-malignant and malignant conditions in which deep *x*-ray therapy had been found of some use. Among non-malignant conditions he mentioned benign hypertrophy of the prostate, relatively few cases of which, he said, had been submitted to *x*-ray therapy, but in his own experience the treatment had proved often successful. In agranulocytosis a number of good results had been recorded following stimulation of the bone marrow by very small doses of *x* rays. Many cases of carbuncle also had yielded to this form of therapy. Within two or three hours of the treatment the patient was usually worse, but within twenty-four hours the condition became limited, and often cleared up with a small incision. Deep *x* rays was one of the best means of alleviating conditions such as leukaemia. Operation was the method of choice in operable cases of cancer of the stomach, colon, rectum, and gall-bladder, and probably of the kidney, though many renal cases would be better for a pre-operative irradiation, and the same applied to carcinoma of the bladder. Radiotherapy was the method of choice in cancer of the skin, lip, mouth, pharynx, larynx, cervix, penis, and testes, also in Ewing's and one or two other sarcomata and lympho-epithelial carcinomata. A combination of radiotherapy and surgery was probably advisable for cancer of the nasal passages, antra, and sinuses, some cases of breast cancer, bone sarcomata, and perhaps prostatic and testicular cancer. Dr. Webster was unable to subscribe to the view that the increasing of *x*-ray voltage until a quality of radiation was obtainable as high as, or higher than, that of radium was likely to offer a better method of treating malignant disease than the ordinary deep radiotherapy installations, and this was borne out by an American authority.

An interesting observation made by Dr. Webster was that the first sign of recurrence in a number of cases of breast cancer was invariably at the thirty-third week after the previous treatment. The same periodicity was found to hold good for a number of malignant conditions in the mouth and at other sites, also in leukaemia and Hodgkin's disease. Some patients showed, instead of a thirty-three-week period, a period of four lunar months, or half the full period. The ascertainment of such periodicity had its practical value, because it enabled one to instruct the patient to return for examination at the time the first indication of recurrence was due.

Radiosensitivity

Dr. W. M. LEVITT said that if they took as their standard of cure a total disappearance of clinical evidence of disease and its continued absence for five or ten years, there was abundant evidence that certain varieties of cancer might be cured by *x*-ray treatment. Of the several factors which influenced the result of *x*-ray treatment in cancer the most important was the radiosensitivity of the tumour. Such growths as lymphosarcomata, lymphoepitheliomata, and the less-differentiated squamous-celled carcinomata could be made to disappear locally by doses of *x* rays that did little or no damage to the normal tissues. On the other hand, fibrosarcomata, most periosteal carcinomata, carcinomata of the bowel, and the highly differentiated squamous-celled carcinomata were all radioresistant, and required for their destruction doses of *x* rays that would not be tolerated by normal tissues. Another factor was the accessibility of the growth to treatment by irradiation. Thus the treatment of most skin growths could be regarded as a trivial matter, while the treatment of a similar growth in the mid-oesophagus was quite a serious undertaking. Palliative treatment by *x* rays in malignant disease fell roughly into two classes—first, that in which the *x* rays were applied for relief of an urgent pressure symptom; and, secondly, that in which temporary regression, more or less complete, could be obtained of the growth and of the symptoms which it was causing. The first class consisted mainly of cases with pressure from growth or glands on the trachea, oesophagus, or vena cava. As to the second class, it might be taken as a general rule that patients with multiple secondary deposits were unsuitable for this type of palliation; but there were two types of case with isolated secondary deposits that gave very good palliative results. One was the case with secondary deposits of carcinomata in bone, and the other the case of lymphosarcoma. On the "debit" side of *x*-ray treatment were the discomforts and in some cases the suffering inflicted by the treatment itself. In his opinion only a good hope of cure or at least of palliation for some years could justify the infliction on patients of the reactions which followed the treatment of disease in the mouth and throat. He did not advise *x*-ray therapy at all in cases of carcinoma in the throat with secondary glands in the neck, except when the primary was in the palate or post-nasal space. In prostatic and bladder cases the reactions, though not so severe as in the throat cases, were of sufficient severity, but he thought carcinoma of the prostate was worth treating in an otherwise favourable case.

Glandular Enlargements

Dr. G. VILVANDRÉ said that the enlarged glands of lymphadenoma, whether of the neck, abdomen, or groin, responded readily to *x*-ray treatment, and usually within two or three weeks a mass of glands would diminish and disappear when subjected to proper *x*-ray treatment with filtration, but such results were obtained for many years before deep therapy came into use. The ready response of such glandular masses to irradiation could also be used as a means of differential diagnosis. Patients suffering from Hodgkin's disease benefited from *x*-ray treatment, and even when pleural effusion was present they were definitely helped. The disease was not cured by *x* rays, but the patient was made more comfortable and as a rule his life was prolonged. He had seen good results follow the treatment of tuberculous glands of the neck provided they were not caseous, in which case they should be treated surgically. *X*-ray therapy would reduce the size of an enlarged spleen, but it would not cure the myelogenous leukaemia from which the patient was suffering. There was no doubt as to the efficacy of deep therapy in the treatment of some gynaecological conditions, and his main consideration and interest lay in the treatment of fibroids and excessive haemorrhage at the menopause. Blanched, weak patients, too ill to stand, would, as a result of *x*-ray treatment, recover good health and efficiency within a few months. In osteo-arthritis really useful results could be obtained. The function of the joint was restored and pain allayed. In malignant disease of the thyroid the results of deep therapy might be as brilliant as they were unexpected. Malignant adenomata and papillary adenocarcinomata were said to be more radiosensitive than the rapidly growing cellular types of carcinoma. Hard carcinomatous glands of the neck had never responded satisfactorily to deep therapy. With regard to breast cancer, even given the same type of malignant disease one could not expect to get the same results in every patient. Two patients of the same age, presenting the same clinical features and histologically the same type of growth, would react entirely differently to *x*-ray therapy. In reply to the plain question, "Can deep therapy cause the complete disappearance of a breast carcinoma?" his answer was in the affirmative in some instances.

After-results

Sir JAMES WALTON brought forward certain statistics relating to the treatment of cases of carcinoma of the breast and of the thyroid. The figures were not valuable in the absolute sense, but only as comparing the results of surgery and radiotherapy. Moreover, he had not given the radiologist a "fair deal," because only the worst cases—those entailing serious operative risks—were sent to the radiologist. Since a special follow-up system, which he described, was started he had treated 201 cases of carcinoma of the breast by operation only. Of this number sixty-six patients had died—thirty-seven of them of recurrence within a year—but a number had lived for several years, and seventy-five were still alive and well; of this group twenty-one dated back for three years, and others for longer periods, even up to seventeen years. The patients operated on in whom the condition had recurred and had been treated by *x* rays numbered forty-four, of whom thirty-seven had died, and seven were alive and well, one of them seven years after the treatment. Eleven patients were not operated on but sent direct for *x*-ray treatment, and of these three had died and eight were alive and well. His cases of carcinoma of the thyroid numbered thirty-two. Twelve had had surgical treatment only; four were dead, five alive and well, and three had been lost sight of. Those patients operated on who had subsequently had a recurrence treated by *x* rays numbered eight; five had died, and three were alive and well. Nine others had been treated by *x* rays only, and seven of them had died, all within the first year. Sir James Walton said that he was conscious of the inadequacy of these statistics because he had had to lump together among the survivors those who had had treatment only a few months previously, and among some of whom recurrence was probable, and those whose immunity had lasted for several years.

Mr. J. E. H. ROBERTS suggested that in some cases treatment by *x* rays precipitated the dissemination of the growth. It had been suggested that irradiated cancer cells underwent a process of autolysis, and those not killed were swept away by lymphatic spread to other parts of the body. With what frequency did such dissemination occur, and how soon did it arise after *x*-ray treatment had been given? Mr. WILLIAM IBBOTSON asked what was the effect of treating a malignant growth to which was superadded an active syphilis. Sir WILLIAM WILLCOX mentioned the value of *x*-ray therapy in persistent sciatica and in brachial neuritis. Dr. DOUGLAS WEBSTER could not agree with the president's suggestion that radiotherapy was empirical. As to the passage out of the cells into the lymphatic stream, they did that in any case, apart from *x*-ray treatment. With regard to active syphilis, he recalled one case of cancer of the tongue which had a syphilitic indication, and which responded to treatment more slowly than other cases of its kind.

SOLITARY DIVERTICULITIS OF THE CAECUM

At a meeting of the Liverpool Medical Institution on February 3, with the president, Dr. E. GILBERT BARK, in the chair, Mr. M. J. BENNETT-JONES read a paper on solitary diverticulitis of the caecum.

Four cases of primary solitary diverticulitis of the caecum were described, and specimens were exhibited. The cases were reviewed together with the seventeen previously recorded cases in the literature. This disease differed from the better-known diverticulosis of the colon in its age and sex incidence. It often occurred in young adult males and females, while diverticulosis was almost unknown before the age of 40 and was much more common in males. Although Odguist and Petrén had described a large congenital diverticulum of the caecum, it did not follow that every solitary caecal diverticulum with a complete muscular coat was necessarily of congenital origin. Cases of this rare disease often simulated acute appendicitis, but might appear malignant when the abdomen was opened. It was likely that many cases had been unrecognized because abscesses in the right iliac fossa were invariably attributed to the appendix. Diverticulitis was always considered in the differential diagnosis of carcinoma of the pelvic colon, but rarely in disease of the right iliac fossa. The operative procedures that might be necessary varied between mere excision of the diverticulum, closure of a perforation, excision of the diverticulum with a part of the caecum, and radical excision of the right side of the colon. The last-named procedure was successfully undertaken in one of the speaker's cases. The true pathology had been recognized at operation, but there was a previous history of intestinal obstruction, some stenosis of the gut, and a large inflammatory mass involving the posterior abdominal wall due to perforation of the diverticulum.

A number of pathological specimens were demonstrated and described at the same meeting. Among those taking part in the demonstrations were: Drs. H. S. PEMBERTON, R. H. MOLE, R. OGILVIE GIRDWOOD, and T. F. HEWER.

ADLER'S CONTRIBUTION TO GENERAL MEDICINE

At a meeting of the Medical Society of Individual Psychology, at 11, Chandos Street, W.1, on February 10, with Dr. H. C. SQUIRES in the chair, a paper was read by Sir WALTER LANGDON-BROWN on the contribution of Adler to general medicine. This was the last of a series of four papers forming a symposium on the work of the late Dr. Alfred Adler.

The lecturer, after paying a tribute to Professor Adler's memory, referred to the chairman's suggestion that papers should be the expression of personal experience and opinion. Accepting that suggestion, he reviewed his own gradual approach to the Adlerian conception through biology and physiology; on the one side the sympathetic nervous system, on the other the endocrine glands; behind them both the hypothalamus as the centre of emotional expression began to assume increasing importance, since it was able to operate through either and in its turn was connected with the prefrontal cortex. Here was mapped out a route by which psychical states could be reasonably expected to produce physical symptoms. When the life of external relations was frustrated, the *élan vital* was thrown back on to the more primitive life of internal relation. Hence frustration often expressed itself in disturbances of plain muscle in the direction either of atony or of spasm. He gave several illustrative cases, recalling that many disturbances of the colon were not an inflammatory colitis at all, but the expression of a loveless and childless life. He next discussed the increasing incidence of anorexia nervosa, attributing it to the increased frequency of tension between mother and daughter, the fashionable fear of obesity, and the fear of going out into a world fiercely competitive in work and games alike. The disturbances of the climacteric were then considered in terms of the sympathetic-endocrine apparatus.

Civilization and Disease

Attention was called to Dr. C. P. Donnison's book, *Civilization and Disease*, which brought out and explained, largely on Adlerian lines, the close aetiological relationship between hyperpiesis, diabetes, Graves's disease, and peptic ulcer. There was hardly an aspect of medicine which had not undergone some change as the result of Adler's teaching. When he linked psychoneurosis with organ inferiority, Adler enabled orthodox medicine to join hands amicably with the new psychology. Even though organ inferiority subsequently retreated into the background of his teaching, the bridge had been built. He emphasized Adler's distinction between a feeling of inferiority and the inferiority complex, in which he limited the latter to the non-cooperative retreat from life's responsibilities, and concluded by a brief reference to the ethical outcome of Adler's teaching.

There was a large audience, and an interesting discussion took place in which Drs. CRICHTON MILLER, GEORGE GORDON, BEVAN-BROWN, C. BRASHER, M. MARCUS, J. C. YOUNG, J. C. BAKER, HILDA WEBER, and O. WOODCOCK joined. Sir WALTER LANGDON-BROWN then replied to the various questions raised.

HEALTH OF THE COAL MINER

At the last meeting of the Association of Industrial Medical Officers, held on January 28 in the London School of Hygiene and Tropical Medicine, with Dr. L. P. LOCKHART in the chair, a paper on "The Health of the Coal Miner" was read by Dr. S. W. FISHER (H.M. Medical Inspector of Mines).

Dr. Fisher discussed in general terms the problems of the present-day coal mine in relation to health, both from the point of view of environment and specific hazards. The average number of persons employed in the coal-mining industry during the year 1936 was 767,100—about 2,400 less than in 1935, and nearly 190,000 less than in 1929.[1] Of these persons the great majority were subjected in some form or other to factors which tended to produce incapacity for work. Dr. Fisher next described the common features of the structure of the coal mine and various points to do with working conditions underground, physiological and psychological. In discussing specific diseases to which the miner might be liable he mentioned in some detail silicosis, nystagmus, beat hand, elbow, and knee, and infective jaundice. He outlined the present-day theories regarding the causation and pathology of silicosis, and showed how important it was as a cause of serious disability in mines, particularly in South Wales. With regard to miners' nystagmus Dr. Fisher discussed its international incidence, aetiology, and treatment. He showed how modern methods of lighting in mines were definitely preventing its occurrence, and demonstrated the different types of lamp which had been used by the miner in the past and up to the present day. It was interesting to note, he said, how the methods of providing illumination in mines were intimately associated with safety, and he welcomed the fact that over the past few years the number of electric cap lamps used by miners had much increased at the expense of hand lamps.

Safety Measures in Mines

Dr. Fisher discussed in considerable detail the causation and prevention of accidents in mines, illustrating his remarks by lantern slides. He demonstrated various types of rescue apparatus, and told something of the work of the Mines Department on safety measures. Finally Dr. Fisher dealt with the question of carbon monoxide

[1] Annual Report of H.M. Chief Inspector of Mines for 1936.

poisoning, mentioning in particular the delayed action that had caused so many fatalities in mine disasters. He showed how vitally important it was to use oxygen and carbon dioxide to expel the residual gas from the body, and urged the use of such apparatus not only in gassing cases but also in any injury where serious shock had occurred.

Dr. A. J. AMOR (Mond Nickel Company Ltd.) gave a practical demonstration of the value of radiology in the diagnosis and prognosis of silicosis. The problem under discussion, he said, was one of very great social significance. Disability for work had caused some of the most tragic conditions in the miner's home. The eventual disablement as a result of disease or injury produced repercussions on the whole economic structure of the community and the country as a whole. Dr. Amor devoted the main part of his remarks to a critical survey of the relationship between radiology and the problem at issue.

Dr. C. L. SUTHERLAND (Silicosis Board), Dr. A. MEIKLEJOHN (Silicosis Board), and Dr. E. R. A. MEREWETHER (H.M. Medical Inspector of Factories) also showed *x*-rays of the thorax, with reference mainly to the difficulties of differential diagnosis and of determining degrees of pathology from radiological examination of workers exposed to silicate dust. Captain HAY (Mines Department) was present by invitation, and demonstrated modern mechanical methods of dust prevention in mines, illustrating his remarks by a series of lantern slides.

TOWN-DWELLER'S LUNG

At a meeting of the Pathological Society of Manchester on February 9, with the vice-president, Dr. L. SAVATARD, in the chair, Dr. J. DAVSON read a paper on town-dweller's lung.

Dr. Davson said that anthracosis in town dwellers was due to the inhalation of siliceous dust along with carbon, and a study of ninety-four lungs which were free from gross pulmonary disease showed, by the technique of micro-incineration, that carbon and silica existed together throughout the tissue. Siliceous dust accumulation was most marked in the apical region and in elderly subjects. Histological examination of apical pleural scars showed that the majority contained no evidence of past tuberculosis, but appeared to be secondary to the accumulation of siliceous dusts at the apex. In some cases the intensity of siliceous dust accumulation in apical scars was quite comparable to that seen in cases of true silicosis, yet the subjects had not been especially exposed to the inhalation of silica dust. In a number of these cases actual silicotic nodule formation was observed at the sites of the most intense accumulation of silica. If so many of these apical scars were not tuberculous, the truth of the view that the majority of adults develop and recover from apical tuberculosis could be questioned; more stress should be laid on the factor of infection and less on the factor of individual immunity in the pathogenesis of pulmonary tuberculosis. This view should stimulate the efforts of public health workers towards the attainment of the complete and permanent segregation of the patient with "open" pulmonary tuberculosis. Siliceous dusts were known to encourage the growth of tubercle bacilli in the tissues; therefore the inhalation of such dusts from the atmosphere of towns must have a deleterious effect on the patient with pulmonary tuberculosis. For that reason he urged that no patient known to have pulmonary tuberculosis should ever be allowed to return to town life.

At a meeting of the London Association of the Medical Women's Federation on January 27 Dr. A. MEAVE KENNY read a paper on the use of sulphanilamide in obstetrics, discussing its application from the preventive and from the therapeutic points of view.

Local News

SCOTLAND

Scottish Lunacy Law

The Secretary of State for Scotland has appointed a Departmental Committee to inquire into the law of Scotland in relation to the treatment of mental disease. The reference to this committee includes the certification and supervision of persons of unsound mind, the release of such persons, arrangements for those suffering from mental illness but not certified, the procedure followed in the case of dangerous lunatics and in the case of mental defectives accused of criminal offences, the definition of mental deficiency, and the arrangements for dealing with mental defectives. The committee is to consist of Lord Russell of the Court of Justice in Scotland (chairman); the Hon. Mrs. J. E. Hamilton; Professor D. K. Henderson, Professor of Psychiatry in Edinburgh University; Sir James C. Irvine, Principal of St. Andrews University; Mr. William Leonard, M.P.; Major Basil Neven-Spence, M.P.; Mr. William D. Patrick, K.C.; Lord Provost John Phin, Dundee; Bailie Violet Roberton, Glasgow; Professor Thomas M. Taylor, Aberdeen University; and Dr. Aidan G. W. Thomson of the General Board of Control for Scotland. The secretary of the committee is Mr. J. A. W. Stone, secretary of the General Board of Control, and communications regarding the inquiry should be addressed to him at the offices of the Board, 25, Palmerston Place, Edinburgh, 12.

Carnegie Trust

At the annual meeting of the Carnegie Trust Lord Normand stated that the market value of the investments of the Trust, which had begun its operations thirty-six years ago with a capital of £2,000,000, now stood at £3,700,000, while out of the annual income a total of £4,000,000 had been distributed in grants. Mr. Andrew Carnegie had expected that beneficiaries would restore to the Trust a part of what they had received, and the sums repaid by beneficiaries had varied from year to year within narrow limits; the amount repaid in the thirty-six years had been about £40,000. A cheque for £200 in recognition of assistance amounting to £50 received nearly thirty years ago was recently received from a beneficiary, while a lady doctor had repaid not only sums granted to her but also those to her two brothers who had left the University in 1914 and had been killed in the war. Lord Macmillan said that thirty-seven beneficiaries had made repayments in the past year, of whom twenty were men and seventeen women; it was noteworthy that the women beneficiaries were rather less than one in three of the total. The report showed that for the seventh quinquennial distribution, covering the period 1935–40, an aggregate sum of £257,300 was allocated to universities and extramural institutions: St. Andrews £43,400, Glasgow £69,000, Aberdeen £46,000, and Edinburgh £68,900, with £30,000 to extramural institutions. The objects for which these sums were granted were: for libraries £38,750, for buildings and equipment £177,550, and for teaching and general purposes £41,000. The number of beneficiaries in 1936–7 had been 3,534, and the sums granted totalled £51,797.

Glasgow Royal Infirmary

At the annual meeting on February 14 of subscribers to Glasgow Royal Infirmary Sir James Macfarlane, who presided, said that during the year 18,155 patients had been treated in the institution. The daily average was 871 (22 more per day than in 1936), although the infirmary was designed to accommodate 650 patients. The report

of the Departmental Committee on Health Services had recommended closer co-operation among local hospitals, but there had been no comprehensive legislation based on this, and the case for co-ordination of hospital services was stronger to-day than when the committee reported. Voluntary hospitals in Scotland now proposed to make representations to the Government to speed up a decision on the Departmental Committee's recommendations. The report of the Infirmary showed that the ordinary revenue of the hospital had fallen short of ordinary expenditure by £29,344, the ordinary expenditure having been £127,431. Subscriptions from wage-earners generally amounted to £30,290, and legacies and donations, out of which the deficit on ordinary revenue had been paid, to £45,637. The Blind Asylum buildings adjoining the Infirmary are being reconstructed to provide a new out-patient department.

IRELAND

Medical Research Council's First Report

The Medical Research Council, which was incorporated on January 26, 1937, has issued its first annual report. The members of the council were: Professor R. P. Farnan (chairman), and Professors J. W. Bigger, J. F. Donegan, W. J. E. Jessop, H. F. Moore, T. G. Moorhead, John McGrath, J. M. O'Connor, and J. M. O'Donovan. The report states that a sum of £10,000 was allocated to the council by the Minister for Local Government and Public Health out of the hospitals' share of sweepstake funds, and that the council's thanks are due especially to the Minister for the sympathy shown during the long period of negotiations, to Hospitals Trust Ltd. for financial assistance during this period, and "to all those who have worked so unremittingly during the past few years in order that a research council for the Irish Free State might become a reality." During the year the council held nine meetings, the first on February 16, 1937. Twenty-eight applications for grants were received, of which fifteen were sanctioned for one year, eleven were refused, and two were withdrawn by the applicants. Information concerning the training, whole-time, and part-time grants was published in these columns on November 6, 1937 (p. 934). In addition grants-in-aid have been awarded to Professor E. J. Conway, Dr. Ninian Falkiner, and Professors Fearon and Ditchburn. Dr. J. C. Shee has been given a grant to enable him to undergo six months' training in goitre research at a centre abroad, to be followed by six months' research into the goitre problem in Ireland. The grant holders, with the exception of Drs. Patrick FitzGerald and J. C. Shee and Professors Fearon and Ditchburn, began work before the end of December. Dr. de Valéra started on November 1; since the end of the year he has found himself unable to continue to hold the grant and has refunded to the council all payments made to him. Further applications for grants will be considered by the council three times each year, in February, June, and November, and it is hoped that before very long workers will be engaged on most of the vital medical problems which exist to-day. The offices of the council have been established at 85, Merrion Square, Dublin.

Curriculum at the National University

The National University of Ireland has adopted recommendations of the General Medical Council, and is to substitute at the beginning of the next academic year a pre-medical examination for the existing pre-registration examination. Under regulations now in force a student may sit for the pre-registration examination in elementary physics and chemistry at the age of 17. In future he may not sit for the new pre-medical examination, which will require a period of study of at least twelve months, until he is 18. He will thus have reached the age of 23 before qualifying instead of 22 as now. The present first medical examination—in applied chemistry, applied physics, and general and applied biology—is to be replaced by a first medical examination in anatomy and physiology. The second medical examination will be in more advanced anatomy and physiology, while the third and final examinations will be as before.

ENGLAND AND WALES

Joint Tuberculosis Council

The winter meeting of the Joint Tuberculosis Council was held in London on February 19, and the members, with some visitors, were afterwards entertained to luncheon by the chairman, Dr. S. Vere Pearson, at the Hotel Russell. The health of the guests was proposed by the chairman, who remarked that the Council had rather tended to leave out the general practitioner, though one of its aims was to foster a good working relationship between tuberculosis officer and G.P., and he therefore welcomed particularly Sir Henry Brackenbury as a distinguished representative of that very large and important section of the profession. The Council was doing good work, but might do better still; that morning it discussed a valuable report on nursing and held a discussion on pneumothorax. Dr. Vere Pearson welcomed also Dr. L. Haden Guest, M.P., and Dr. Stella Churchill, Colonel Caddell, secretary-general of the National Association for the Prevention of Tuberculosis, and the editors of several medical journals. He voiced the feeling of all present in regretting the retirement from the honorary secretaryship of the Council of Dr. Ernest Ward, who, with his initiative and devotion, had been its moving spirit since it was founded seventeen years ago. Sir Henry Brackenbury, in reply, spoke of the importance of the Press and of Parliament in relation to medicine and the field of health. He said that the Joint Tuberculosis Council was now accepted by, and acceptable to, the public and the profession, but, like other specialist services, the tuberculosis service should be aware of the general practitioner's reactions to it. The good general practitioner wanted to be, and to remain, an all-round man, desiring full association with the special branches of medicine; it was not good for him to feel a sense of intrusion or a deprivation of experience and responsibility. The toast of "The Council" was proposed by Dr. Haden Guest, who recalled that the two main functions of the Joint Tuberculosis Council were the giving of scientific and administrative advice; beyond this he thought it might do more to influence public opinion, taking a leaf from the B.M.A.'s book. The medical view was apt to be underestimated by the public and by Parliament, and some pushing forward—even some vulgarization, however repellant to scientific people—must be indulged in nowadays to get points home. Dr. Ernest Ward, in reply, said that he laid down his secretarial work for the Council with regret and thankfulness. The chairman's health was proposed by Dr. Stella Churchill.

Medical Treatment of London School Children

The arrangements made by the London County Council for the medical and dental treatment of school children for the year beginning April 1 include the further extension of the treatment of squint by orthoptists working under the direction of ophthalmic surgeons, a method which has proved very successful during the past three years; an additional audiometric unit to relieve the congestion of children needing testing and treatment for ear defects; the opening of four new centres for the treatment of minor ailments; and an extension of the scheme of nutrition centres. An increase in the number of sessions devoted to dental treatment and additional provision for orthodontic treatment are proposed.

Hunterian Society Dinner

The annual dinner of the Hunterian Society was held at the May Fair Hotel on February 17, the 210th anniversary of the birth of John Hunter. After the loyal toasts, "The Memory of John Hunter" was honoured. Lord Snell, the guest of honour, then proposed the health of the Society. He said that much medical knowledge—for example, about food—was not applied either by local authorities or by individuals in their own homes; in fact, much propaganda was devoted instead to creating an entirely wrong sense of food values. In responding, the president, Dr. D. C. Norris, reviewed the activities of the Society during the past twelve months. The publication of the *Transactions* had been resumed last year. He then formally presented to Dr. John Wilson Reid of Anglesey the gold medal of the Society for an essay on the prognosis and treatment of heart disease in general practice. The toast of "The Guests and Kindred Societies" was proposed by Mr. Alex E. Roche, and on behalf of the guests Judge Earengey, K.C., Sir John Stavridi, and Mr. Hugh Lett (Master of the Apothecaries' Society) responded.

Births and Deaths in London in 1937

The births registered in London during the fifty-two registration weeks of 1937 numbered 63,816, compared with 65,375 in the fifty-three registration weeks of 1936. The crude birth rate per 1,000 of the population in 1937 was 15.6 as against 15.8 for 1936. The corrected rate (which excludes the births of non-Londoners) will be about 13.4 The deaths registered in 1937 numbered 50,081, compared with 51,454 in 1936, when, however, there were fifty-three registration weeks. The crude death rate was 12.2. The infant mortality showed a marked drop in 1937, being 51 per 1,000 registered births, as against 57 in 1936. Deaths from puerperal sepsis and other accidents of childbirth in 1937 numbered 124, or 1.9, per 1,000 registered live births, against 115, or 1.8, in 1936. There were 520 deaths from street accidents in London in 1937, a slightly lower figure than for the two previous years.

Reunion of Radiographers

The annual dinner of the Society of Radiographers, held in London on February 19, brought together over 200 members, the largest gathering in the seventeen years' history of the society. Dr. G. W. C. Kaye, the president, welcomed the guests, who included Mr. C. Thurstan Holland, the "grand old man of radiology," Dr. Russell J. Reynolds, president of the British Institute of Radiology, with which the society has a working alliance, Dr. R. E. Roberts, president of the Section of Radiology of the Royal Society of Medicine, and representatives of affiliated societies of radiographers in Manchester, Liverpool, and the Midlands. Mr. Thurstan Holland, in responding for the guests, took his audience back to the earliest days of *x*-ray work in 1896, and declared that he had as good a claim to call himself a radiographer as any of those present, because in those early years, until 1904, he had to do everything in his department, including the repair of apparatus, the development of plates, and the making of prints and lantern slides. He had also occasionally to offer an opinion to senior physicians and surgeons, among whom in those days the "*x*-ray man" was not very popular. In 1904 at the Royal Infirmary, Liverpool, he was given the services of a lay assistant, and to that first assistant and all his successors he paid a tribute. Never once had he been let down by an assistant. Mr. Cuthbert Andrews, in proposing the health of the Society of Radiographers, reminded his listeners of what they had gained in status, recognition, and salary scale under its auspices, and Dr. Kaye, in responding, said that the membership of the society was over 1,100, and was increasing at the rate of about 100 a year. It was recognized by the Board of Medical Auxiliaries, and it had four branches—in Scotland, in South-West England, and in Australia and South Africa. The aim of the members was to serve the medical profession to the utmost of their ability. During the evening the Sir Archibald Reid memorial medal was presented to Miss A. M. V. Ash of the Western Infirmary, Glasgow, for a prize essay, and the Stanley Melville memorial medal to Mr. H. T. Ferrier for the best lecture of the session. A cheque was also presented, with many expressions of appreciation, to Mr. F. Melville, who has been honorary secretary of the society since 1927.

Ambulances in Air Raids

The report of the Home Service Ambulance Committee of the Joint Council of the Order of St. John of Jerusalem and the British Red Cross Society for the quarter ended September 30, 1937, points out the importance of ambulance transport in air raid precautionary schemes. In the event of war a great deficiency in the number of ambulances available is foreseen, and the creation of improvised transport from trade vans and other vehicles is envisaged. For the manning of these ambulances a large increase in the numbers of trained personnel would be necessary. The staffing of first-aid posts for treatment and decontamination, and of first-aid parties to search for and rescue the wounded in streets and houses, together with the provision of skilled helpers to assist overburdened hospital staffs, would also demand a large number of trained men. The report therefore maintains that recruiting must be pursued with the greatest energy, and that the time for this is *now*. Alluding to recent trials carried out in various parts of the country, the report draws a vivid picture of the difficulties likely to be encountered, especially during air raids at night.

"With all lights extinguished or obscured, with vision further hampered to a considerable extent by respirators, driving perhaps through clouds of gas, and having to keep a constant watch to avoid craters in the road caused by high explosives, and floods due to burst water-mains, they would have to grope their way to places where casualties have occurred; to assist the first-aid parties in carrying out such first-aid work as is immediately essential; to make every effort to avoid the contamination of themselves and their patients by mustard gas; and to get their patients as quickly and safely as may be to their appropriate destination, whether hospital or first-aid post."

The report states that many consultations have taken place between representatives of the Air Raid Precautions Department of the Home Office and those of the Order and the Society concerning the preparation of schemes for adequate ambulance service. It is pointed out that if ever the occasion for action arises it will come suddenly, and it is therefore of prime importance that plans to secure, adapt, equip, and man the necessary vehicles should be completed beforehand.

Royal Berkshire Hospital Centenary

The story of the Royal Berkshire Hospital[1] is told with the laudable intention of helping the hospital's centenary appeal fund. Every good wish, therefore, attends its publication. The approbation of Queen Mary, to whom the volume is dedicated, has already been obtained, and her signature is reproduced in each copy. The book is a cento rather than a reasoned history, for the eleven chapters are contributed by ten writers. But it is a readable patchwork, contains much that is interesting, and details the growth of the hospital from small beginnings to its present position amongst the greater provincial hospitals. It secured the patronage of William IV at a very early period of its existence. His death caused the postponement and final abandonment of the opening ceremonies until the number of accidents attending the

[1] *The Story of the Royal Berkshire Hospital 1837–1937*. Edited by Ernest W. Dormer. Reading: Poynder Press, Gun Street. (6s., or 6s. 6d. post free.)

building of the Great Western Railway led to the scheme being pushed on to completion. The opening celebrations on May 27, 1839, ended with a dinner costing 5s. a head (wine not included). The meal began at 3 o'clock and the company dispersed at 8.15, after listening to twenty-nine toasts, many with musical honours. A gallery was provided for 100 ladies, who were "regaled not with viands off the table but with the more refined luxuries of music and eloquence." The ladies appear to have become restless after the twenty-third toast, but were persuaded to remain until the twenty-fourth, when the reporter states that "they made their escape." The various chapters deal with different phases of the hospital's activities, the dental section alone appearing to have been omitted. *X* rays were soon used by the hospital, but not on a very large scale, as the running expenses of the department for the year 1900 were £7 12s. 11d. In 1903 Dr. Gordon Paterson exhibited to his colleagues a patch of dermatitis on his own skin, the result, he said, of carrying a small tube of radium in his waistcoat pocket. Dr. Logan Dahne gives an excellent account of the recent grant of Arms to the hospital, and illustrates it with a double-page plate in colours. The very useful appendices contain lists of the various officials attached to the hospital, with the dates of their appointment and termination of service. There is also a satisfactory index. The fifteen illustrations are well reproduced.

Remuneration in L.C.C. Mental Hospitals

Changes in the grading and remuneration of medical officers at certain institutions under the Mental Hospitals Committee of the London County Council are proposed. When the institutions of the old Metropolitan Asylums Board for mental patients were transferred in 1931 the medical needs of those institutions were not thought to require a large staff of medical assistants, and consequently there appeared to be a smaller degree of medical responsibility than at the large original institutions of the Council. Lower rates of pay were therefore fixed for the higher medical staff, though subsequently at two institutions special allowances were made. Since the transference there has been a considerable alteration in the conditions under which medical work is done, the standard of medical care has been raised, and the scope of treatment expanded in every direction. It is therefore felt that the grading and remuneration of the higher medical staff should now be the same at all the large transferred institutions as at the large county mental hospitals. This means that the medical superintendent, instead of £1,250 plus a house, will receive £1,450 plus a house; the remuneration of the deputy medical superintendent of a large institution will be £850-£50-£950, being an increase of £50, and that of the first assistant medical officer will be £750-£25-£850, instead of £625-£25-£750.

Medical Staffing of L.C.C. Mental Observation Units

The existing arrangements for the medical staffing of mental observation units at the hospitals of the London County Council provide for the seconding to those units for periods of not less than one year or more than two years of selected assistant medical officers in the mental services. Experience has shown that there is little likelihood of there ever being a sufficient number of officers of this rank in the mental services with the necessary qualifications and experience to maintain the steady sequence of volunteers needed for this duty. In fact, the four units at St. Pancras, St. Clements, St. Francis's, and St. Alfege's hospitals are, or very shortly will be, without suitable medical staff. It is therefore proposed to recruit the specialist staff required from the ranks of second assistant medical officers in the mental services, a grade higher than that from which volunteers for the duty are at present sought. This will necessitate an increase in the fixed medical staff of the mental services of the L.C.C. by four positions of second assistant medical officer, so as to permit of four officers of the grade always being seconded to the observation units. It is also proposed that it should be a condition of promotion from the rank of assistant medical officer to that of second assistant medical officer that the officer promoted will be ready to undertake service, without option and in rotation, in an observation unit, and that a year should be taken as the normal period of seconding, though exceptional circumstances might make it necessary in some cases to extend the period to not more than two years. The scale of salary of the second assistant medical officers to be appointed will be £625-£25-£700; that of the assistant medical officers seconded under the original scheme was £470-£25-£570, with a special allowance of £50 a year to a holder of a diploma or degree in psychological medicine.

INDIA

All India Obstetric and Gynaecological Congress

The second All India Obstetric and Gynaecological Congress will be held at Bombay from April 13 to 16 next under the presidency of Dr. B. D. Mukherji of the Carmichael College, Calcutta. A medical exhibition is also arranged as part of the programme. The subjects chosen for official discussions are toxaemias of pregnancy and carcinoma of the cervix. The congress will be inaugurated by the Prime Minister of the Government of Bombay, and the medical exhibition will be declared open by the Minister of Health. An invitation is extended to all obstetricians and gynaecologists to attend the congress. Further information can be obtained from the organizing secretary, Raj Bhuvan, Sandhurst Road, Bombay, 4.

Women Patients in the Punjab

The report on the working of hospitals and dispensaries in the Punjab (1936) records a remarkable increase in the number of women patients. Unfortunately, however, continued financial stringency has precluded appreciable progress in the scheme for expansion of female medical relief. Although the number of women and children attending hospitals during the year under review exceeded that of the men, the available accommodation is stated to be totally inadequate. The deficiency is especially marked in the smaller centres. Only a few district headquarters have separate women's hospitals; in most cases the hospital includes a female section under the charge of a woman subassistant surgeon. At one district headquarters, Jhelum, there are no facilities, except at a mission hospital, for the treatment of women by doctors of their own sex. The report also emphasizes the need for special women's dispensaries in small towns and villages. A tribute is paid to the work of the mission hospitals, the pioneers of medical relief for women in the province. Many of these are finely equipped and are staffed by fully qualified lady doctors assisted by competent nursing staff. With regard to facilities for the medical education of women in the province the report states that the need for the establishment of the proposed Medical School for Women at Lahore becomes more pressing every year. The accommodation available at the Punjab Medical School for Women, Ludhiana, and at the Amritsar Medical School, where the system of co-education is in force, is far from sufficient, and many applicants for admission have to be refused. Dispensing appears to be less popular as a career for women, and it is a matter of difficulty to induce students to train for this important work.

Assam in 1936

From the annual public health report of the Province of Assam it appears that 1936 was a comparatively healthy year, without major epidemics; the death rate fell, as also did the birth rate. The registration of vital statistics is still regarded as being far from satisfactory, and officials of the public health department have been urged by the

Governor to acquaint themselves more closely with the conditions of the villages in the interior, and to track out and subdue those diseases to combat which the department was created. Malarial fevers constitute the chief scourge of this Province, but there was a fall in the incidence of them in the year under review as compared with 1935. Quinine-reinforced cinchona febrifuge was used as a general preventive and curative agent, and its supply to the population has been promoted by lowering its cost. The Assam Medical Research Society has been concentrating its activities on malaria control with promising results, especially as regards the campaign against *Anopheles minimus*. There was a slight rise in the incidence of small-pox, but a fall in that of cholera. Vaccination against the former disease is not compulsory in rural areas in Assam, but the people are encouraged to be vaccinated; in some areas there is much opposition to overcome. The kala-azar incidence and mortality rate fell. The intravenous injection of urea-stibamine is the method of diagnosis and treatment, and a great deal of survey work is undertaken with a view to prevent a recrudescence of this disease. Rice is the staple diet. It is reported that adulteration of food is increasing and that the Assam Pure Food Act is not working very satisfactorily, local boards showing little interest in this matter, though the record of municipalities in this respect is somewhat better. Consideration has been given to the problem of reorganizing the public health department so as to create a more intimate spirit of co-operation between the villagers and officials of the department.

Madras Hospitals and Dispensaries

Major-General Sir Frank Connor, I.M.S., surgeon-general with the Government of Madras, reports a net increase of one in the number of civil hospitals and dispensaries in that Presidency in 1936 compared with the previous year. There were 1,235,295 cases of diseases of the respiratory system other than pneumonia and tuberculosis, and 1,192,351 of diseases of the digestive system; 614,079 operations were performed, with a death rate of 0.25 per cent., compared with 0.27 in the previous year. There was a decrease in the number of maternity cases conducted in these institutions, due to the opening of more maternity and child welfare centres, the appointment of separate midwives by municipalities and district boards for domiciliary work, and the consequent prohibition of hospital and dispensary midwives from conducting labour cases outside their institutions. A considerable fall occurred in the tuberculosis death rate. As a further step in anti-tuberculosis work in Madras City a tuberculosis clinic on up-to-date lines has been started for the examination of contacts as an adjunct to the Tuberculosis Institute, and the Government has taken over Dr. Muthu's sanatorium at Tambaram with the view of providing more accommodation for such cases. Sir Frank Connor states that there is need of some thousands more beds for tuberculosis cases in hospitals, sanatoria, and clinics. Radiological work grows apace in the Presidency; two new departments were opened in 1936, and more are being established, while several of the older ones are being brought up to date by the addition of new equipment. At the end of 1936 there were 445 leprosy clinics actively functioning; with a grant-in-aid from the Silver Jubilee Fund special clinics for the study of leprosy and its epidemiology are being established in five places and increased bed accommodation is being arranged in eight leper hospitals. Special investigation units are being established for intensive study of the disease, particularly in children. The Government General Hospital in Madras has been remodelled, and new hospitals have been completed at Madura and Cocanada. There was an increase in the number of medical students in the Vizagapatam and Madras medical colleges; a revised curriculum was approved in 1936 suitable to the extended course of five years.

Correspondence

Co-operation

SIR,—The report by Mr. Harold Murphy on the outbreak of typhoid fever at Croydon will be closely studied by medical officers of health in order that they may find out if there are any ways in which their customary procedure in dealing with outbreaks of infectious disease may be varied or improved on, and it may be assumed that both the Society of Medical Officers of Health and the British Medical Association, between which there exist the most cordial relations, will during the coming months give the matter their close consideration.

There is one important section of the report which unfortunately is not quite clear. I refer to the functions of the suggested committee of local practitioners to consult with the medical officer of health. It is true that Mr. Murphy does not actually suggest that "the more ready communication between the medical officer of health and the general body of practitioners" should take the form of a committee representative of local general practitioners, but it is evidently the view of Lord Dawson and other prominent medical men that it should take this form. Now the universal practice of medical officers of health when confronted with a possible epidemic of a dangerous disease is to establish immediate contact, either by telephone or by letter, or by both, with *all* the local medical men practising in the area at risk, informing them of the danger, in order that they may get in touch with him at once if they have any patients with symptoms arousing suspicions of the disease in question. It is also the universal practice for the local medical men to co-operate fully with the medical officer of health and to refer to him without delay either definite or suspected cases of the disease. They expect and receive without question and without delay the fullest help which the public health department can offer them, usually in the form of personal consultation with the medical officer of health at the bedside of the patient. The medical officer of health can do no more; he dare do no less.

What, then, would be the function of the committee, which would necessarily consist of only a small proportion of the practitioners of the area? What information could be given to or by the committee which should not be given to *all* the practitioners in the area? The medical officer of health cannot delegate any part of his responsibility in dealing with an epidemic to any committee; he must personally be responsible for all information reaching all the practitioners direct. And when the practitioners have information of value to the medical officer of health, why should they not, in a situation where no time may safely be lost, transmit this information directly to the medical officer as in the past? In the face of recent legislation, especially the Local Government Act of 1929, which transferred all the old Poor Law beds to the local authority, no one will question the advantage to both the medical officer of health and the local profession of a standing committee through which both sections may consult and co-operate, but in the presence of an actual epidemic of infectious disease it is not clear what useful purpose meetings of this committee would serve.—I am, etc.,

HUGH PAUL, M.D., D.P.H.,
Medical Officer of Health.

Smethwick, Feb. 16.

An English Pneumonia Service

SIR,—I cannot tell Dr. W. G. Booth (*Journal*, February 19, p. 417) whether a county council is allowed to supply anti-pneumococcal serum free, but any local sanitary authority can do so. For years past the two local authorities for which I am part-time medical officer of health have done this. They pay for the typing of the sputum and provide the serum free of charge. It is stored at the sanitary inspector's office, at his residence, and at my residence; in this way, as Dr. Booth so wisely stresses, it is available day and night. The storage of the serum is not costly, since any serum which is not used can be returned to the makers shortly before the date of expiry stamped on each packet is reached, and is replaced by a fresh supply free of charge. I suggest that Dr. Booth might ask the local medical officers of health to request their council to pass resolutions authorizing this service.—I am, etc.,

ARTHUR T. BLEASE,
Medical Officer of Health, Bucklow Rural and Knutsford Urban Districts.
Altrincham, Cheshire, Feb. 20.

Oblique Osteotomy for Fracture of Neck of Femur

SIR,—The one problem which remains in the treatment of this injury is avascular necrosis of the head of the femur. In reporting his operation of oblique osteotomy (*Journal*, February 12, p. 330) Mr. T. P. McMurray attributes this necrosis to the nailing operation, and suggests that it is due to the mass of metal in the bone. He therefore advocates osteotomy and plaster immobilization as the primary treatment in recent fractures.

But avascular necrosis and disintegration of the head is not a complication of the nailing operation; it is a complication of a certain type of hip injury which occurs whether there is a nail in the bone or not. The nutrient vessels of the shaft extend no higher than the femoral neck; the head of the bone is supplied entirely by vessels which enter through the capsule of the joint, and in a proportion of cases through the ligamentum teres. If a fracture lies below the capsular attachments the blood supply of the head is unimpaired. Avascular necrosis does not occur, therefore, in basal or low cervical fractures even if they are nailed. If the fracture lies above every capsular attachment to the bone, this source of blood supply is cut off and the vitality of the head depends on the vessels of the ligamentum teres. Where these vessels are also inadequate necrosis will now occur, whether the fracture is treated without operation, by nailing, or by osteotomy. It occurs even more commonly after traumatic dislocation of the hip, because both capsule and ligamentum teres are damaged and both sources of blood may be cut off. It also occurs after arthroplasty of the hip if the capsule has been too freely reflected, and occasionally in epiphyseal coxa vara and other hip injuries. The evidence suggests, therefore, that the complication has nothing whatever to do with the nail. Provided that the earlier type of open reduction involving capsular reflection is abandoned in favour of extra-articular insertion, the operation for introduction of the nail must also be exonerated.

To perform the oblique osteotomy successfully is no easier than to perform the nailing operation successfully. Moreover, the end-result is not quite so good. There is slight limitation of certain hip movements, shortening, and a tendency to stiffening of the knee. If we can be sure that we are dealing with a case which will not develop avascular necrosis the nailing technique is undoubtedly better. On the other hand, if necrosis and degenerative arthritis supervene the result of oblique osteotomy is as good as the result of an arthrodesis, and has the advantage of attainment by one operation instead of two. The only justification for the routine use of osteotomy in recent fractures would be a very high incidence of degenerative arthritis.

We know the incidence of the type of fracture which impairs the blood supply of the head of the femur, for there is always radiographic evidence of this five to eight weeks after injury. But we are not sure how often the head can survive this ischaemia. Not until several more years have elapsed shall we be certain of the incidence of actual disintegration of the head. But there can be no doubt that it will be less than the 25 per cent. Mr. McMurray suggests. The report that Henderson has found disintegration of the head in 25 per cent. of his successful results is, I think, a misquotation. In the article with which I am familiar (*Surg. Gynec. Obstet.*, 1937, **65**, 711) Henderson merely states that in approximately 20 to 25 per cent. of adults the blood vessels in the ligamentum teres are lacking. This would mean that avascularity of the head occurs in 20 to 25 per cent. of fractures which lie above all capsular attachments—that is, in 5 to 10 per cent. of all fractures of the femoral neck. This incidence would conform much more to one's own provisional estimates, and it is not high enough to justify abandoning the nailing operation with its possibility of perfect results in the other 90 to 95 per cent. of cases.

At the moment one's own routine is to nail all recent fractures, arthrodese united fractures with disintegration of the joint, and perform the McMurray osteotomy for ununited fractures and for fractures several weeks old which already show evidence of an avascular head. Possibly we should go further, and in those few cases already nailed which after a few weeks show an avascular head we should not wait for the disintegration, but at once remove the nail and perform the osteotomy. But I would urge that the osteotomy should be reserved for these strictly selected cases. For them it is an invaluable procedure—simple and effective. For the uncomplicated case it is far short of the ideal.—I am, etc.,

Liverpool, Feb. 13. R. WATSON-JONES.

SIR,—It is with considerable diffidence that I write to criticize a paper by so eminent an orthopaedic surgeon as Mr. T. P. McMurray (*Journal*, February 12, p. 330). My experience of the nailing operation for median fractures of the femoral neck has been so satisfactory that I cannot allow Mr. McMurray's comments on this procedure to go unchallenged. Summarizing his points he writes:

"The disadvantages of the insertion of a metal pin are: (1) the risks of failure to insert the pin in the ideal position, and the very definite risk of non-union; (2) the occurrence of fragmentation in the head of the femur following an apparently successful operation; (3) the very definite risk of infection in the hands of non-experts in the method."

To take these objections in order. In the radiologically controlled operation (which is an operation that must at least be considered in any criticism of nailing procedures) a guide wire is first placed in the "ideal" position in an accurately reduced fracture and its position is checked by *x*-ray examination before the nail is driven home. Following this technique there should be no badly placed nails.

The problem behind fragmentation of the head is surely one of destruction of its blood supply, which is mainly carried to it by the capsule and its reflexions. Any open exposure of the fracture site perhaps adds to the damage to the "vascular" capsule, which has already been injured by the trauma causing the fracture, but in these days we pay as much attention to the capsule as we can, and reduce our fractures by gentle methods. We nail them by an extra-articular technique when, and only when, we have an exact reduction of the fracture. This reduction does not indicate that the bony surfaces alone are in apposition, but it also means that the rent in the torn capsule is reduced and its edges are in close enough apposition for healing to occur and for the vascular damage to be repaired. Mr. McMurray's figures (quoting Henderson) of a 25 per cent. incidence of necrosis of the head of the femur following the nailing operation are much too pessimistic. In my series of over fifty radiologically controlled operations I am aware of only one case of a definite change in the head. I think it would be safe to reduce this 25 per cent. incidence to 5 per cent., and I am prepared to grant larger figures than this when fractures are nailed which are not accurately reduced; but surely this is an error of technique rather than a criticism of the method. I disagree with Mr. McMurray's contention that the metal nail may be a cause of necrosis of the head fragment at "any time within the next two or three years" following the operation. The nail is placed through the fracture to immobilize it until union has occurred. When that result is obtained the nail should be removed. I have removed over twenty nails when I have considered their removal a safe step. I think I can look upon these cases as true end-results. They all are satisfactory, and prove to me the real value of the nailing operation. As regards infection, I have not even one such case in my extra-articular operations. Compared with my experience of the open operation, the absence of infection and shock is one of the greatest advantages of the extra-articular procedure. Since the average age of my patients is well over 60 this advantage is real.

Considering only recent medial neck fractures, there is one type in which the bone of the femoral neck is extremely soft—so soft indeed that the nail is not an efficient immobilizing agent, and "impaction" of the fracture is impossible. A plaster support has to be used in addition to the nail to secure immobilization. For this type of fracture Mr. McMurray's osteotomy may be the wiser procedure; but such patients will be considerably older than those reported in his series.—I am, etc.,

St. James' Hospital, S.W.12, Feb. 14. WILLIAM GISSANE.

Adult Serum in Measles

SIR,—I should like to enter a timely plea to those clinicians and pathologists who, like myself, are concerning themselves with the preparation and use of adult measles serum to utilize the present epidemic as a means of comparing adult serum in its preventive and attenuative aspects with commercial placental extracts. I am informed by an L.C.C. authority that the potency of such placental extracts was found to be *rather less than half* that of adult serum. The matter is one which needs clarification, and it is hoped that the present epidemic will provide a clear and unequivocal answer. The results obtained from adult serum in local use have so far been very satisfactory, but it would be premature to form a comparative opinion at the present time. The British Medical Association would be performing a very valuable service by collecting and correlating statistics on these lines.—I am, etc.,

A. GEOFFREY SHERA, M.A., M.D.Camb.,
Eastbourne, Feb. 17. Honorary Pathologist, Princess Alice Hospital, Eastbourne.

Antityphoid Inoculation

SIR,—On taking over the appointment of district medical officer, Lautoka, in February, 1930, it appeared to me that a complete or almost complete immunization of my whole district against enteric fever and the maintenance of that immunity over a period of years would be one of the most beneficial of practical public health measures. Hitherto no such comprehensive measure has been carried out in this country.

A yearly crop of cases of enteric fever used to occur in Lautoka district, one year one area providing the bulk of the cases, another year another area. In 1923 there were thirty-four cases with four deaths, and in 1927 sixty-one cases with ten deaths. In other years before 1930 the true Lautoka cases were not always distinct from cases which were admitted to Lautoka Hospital from other districts, so that accurate figures are absent, but undoubtedly the amount of sickness and death was large. The Lautoka medical district contains 10,000 persons, of whom just over 7,000 are between the ages of 1 year and 40. The races are roughly: Europeans, 400; Fijians, 900; Indians, 8,000; others, 600. The population of Nadi district to the south of Lautoka is 12,000 and of the Ba district to the north is 15,000. The other boundaries to Lautoka medical district are the mountains to the east and the sea to the west.

It was decided to inoculate that section of the population which was aged from 1 year to 40 years, the full dose to be 1 c.cm., but the dose to be decreased according to age and weight. The inoculations performed in each year were as follows:

1930	4,000	1935	790
1931	2,451	1936	1,237
1932	4,179	1937	4,744
1933	4,093		
1934	2,740	Total ..	24,234

The following are the numbers of cases of enteric fever and mortality by years up to 1937:

Year	Cases	Deaths
1931	19	4
1932	7	0
1933	8	1
1934	0	0
1935	2	1
1936	1	0
1937	3	1

These figures suggest a very large measure of success for the antityphoid inoculation. During these years the Lautoka Hospital has received many cases of enteric from Ba, Tavua, and Nadi, some even from Ra and Sigatoka. There were in fact several epidemics at Tavua, Ba, and Nadi. Though bounded on each side by districts in which typhoid epidemics were occurring, the disease steadily decreased in numbers at Lautoka, as shown above.

It is true that in 1935 the Deputy Governor stated in Legislative Council that a small epidemic of typhoid fever had occurred at Lautoka. I wrote to point out His Excellency's error, since there was no epidemic at Lautoka, though there was an epidemic at Ba and at Nadi—that is, on either side of Lautoka. His Excellency replied to me in a personal letter admitting his mistake and regretting

that he had been misinformed. Nadi district was first put under my control in 1933, and a similar series of inoculations was started there. It will be of interest to note the results at Nadi also if the vaccination is continued, say, for five more years.

The immediate value of antityphoid inoculation as carried out at Lautoka may be admitted. Much sickness and many deaths have been prevented, and there is value in the success of any beneficent measure that calls for explanation and co-operation between the different classes and races. Such are unfortunately the total gains. The causes of the prevalence of enteric fever remain, and they are to a large extent also the causes of bacillary dysentery. These causes are well known. They are published in the newspapers. They evoke the taboos and dogmas of primitive man. They are platitudes of the schoolroom and the council chamber. Nevertheless a little repetition may be of benefit. The chief cause is polluted water. A pipe supply of pure water to all closely settled areas would spell the end of epidemics of typhoid and bacillary dysentery in Fiji.

Existing water supplies for drinking and cooking in this and most other Indian districts are from wells and streams. Both sources are subject to the gravest pollution. The wells are badly made and badly situated. The streams mostly run through small holdings, the custom being for defaecation to be performed near water—that is, near a stream. The first rain then washes the excrement into the stream, and thus pollutes the supply for all below it. Even in the absence of rain some of the ablution water may reach the stream. This bad habit is not confined to Indians: I have seen similar practices in Fijian districts. In this district the pollution is realized by those who live on the lower reaches of the streams, so that they go out to collect their drinking water at four in the morning, when the stream has had the night for recovery, and pollution may be, they think, at its minimum. The above is unpleasant reading, but it is as well to remember that no sensible person would drink river water or stream water in England—pollution is just as bad, though of a different nature.

The true answer to the problem of dysentery and typhoid in Fiji is a piped supply of pure water. The next best thing is a rigid inspection of all wells. A less beneficent method is that which has been described above—namely, immunization.—I am, etc.,

Lautoka, Fiji, Jan. 2. PHILIP HARPER, M.D.

Br. abortus Infection Treated by Sulphanilamide

SIR,—Although the occurrence of infection by *Brucella abortus* in this country is not common, according to Creed 25 to 30 per cent. of retail samples of mixed unpasteurized milk contain this organism, and it is estimated that 20 per cent. of the cattle in Great Britain are infected. It is therefore surprising that more cases do not occur, since pasteurization is, unfortunately, by no means the usual practice, and infection, except among those engaged in milking the cows, is always milk-borne. The comparative rarity of the disease and the lack of distinctive physical signs make the diagnosis difficult, and treatment up to the present has been mainly symptomatic and consequently somewhat unsatisfactory.

The following case presents the usual symptoms and signs of the disease and suggests an effective treatment.

A married woman, aged 66, was seen by me on December 20, 1937. She said she thought she had had a temperature for a fortnight, but had not felt sufficiently ill to consult a doctor. It was her first day in bed and she complained of headache, lassitude, anorexia, and insomnia. The temperature was 102° F. and the pulse rate was 92, but careful examination revealed no other abnormal signs. A specimen of urine showed nothing abnormal.

I saw her again on December 23, and as the temperature had risen each day to between 102° and 103° F. I asked Dr. Facey to examine her blood. He reported that the Widal was negative for T.A.B. but agglutination occurred with *Br. abortus* in dilutions up to 1 in 2,500. The blood count revealed: red cells 4,060,000, haemoglobin 68 per cent., colour index 0.84, white cells 4,000; a differential count showed nothing abnormal. To confirm the diagnosis an intradermal dose of brucellin was given, and gave a strongly positive reaction in thirty-six hours.

A supply of brucellin for inoculation could not be obtained, so a blood transfusion of 350 c.cm. was given on January 6 in order to increase the leucocytic and red cell count, and also in the hope that it might supply missing complement to the patient's blood. She felt better but for a few hours only. On January 13 a dose of 0.75 c.cm. of brucellin was given intramuscularly, but no reaction occurred and no improvement followed.

Having read a letter by Dr. J. H. Lloyd in the *Journal* of January 15, I gave my patient a first dose of *p*-aminobenzene sulphonamide on January 17. At the same time I gave her another injection of 1.25 c.cm. of brucellin. There was again no reaction from the brucellin, but next day the temperature was normal. Two 7½-grain tablets of sulphonamide were given the first day, eight the second, and eight the third, the temperature remaining normal all this time. The dosage was then cut down to one tablet daily, and on January 25 a rise in temperature to 99° F. occurred. The tablets were increased to four daily and the temperature has been normal since. The patient is now up and about and appears to be in normal health.

A reactionary rise of 2° F. is required before brucellin is expected to have any beneficial effect, and, as no reaction occurred after either injection, it would appear that the fall in temperature was due to the sulphonamide preparation, especially as it controlled a slight rise of temperature later. The duration of *Br. abortus* infection, according to Dalrymple-Champneys, averages twelve and a half weeks, so that any remedy which appears to influence so readily the course of the disease deserves to be brought to notice. It is with this object that I record this case.—I am, etc.,

NEWTON MATTHEWS, M.B., Ch.B.

Bournemouth, Feb. 15.

Erysipelas and Cellulitis

SIR,—In these days of sulphonamide medication for haemolytic streptococcal infections some of the older and approved methods of treatment are apt to be lost sight of. In Mr. John Hosford's interesting article on erysipelas and cellulitis in the *Journal* of February 12 (p. 346) I note that no mention is made of the advantages of open-air treatment in these cases. During the war, when erysipelatous infections of war wounds were not uncommon, it was generally accepted that a marked improvement occurred on removing these cases from the wards and treating them under canvas.

At the Royal Victoria Hospital, Netley, during the war a relatively high mortality was noted among the cases treated in the wards of the old hospital, whereas the cases transferred to bell tents showed a rapid fall of temperature and a general improvement in their condition. Among those treated in this way there were no deaths at all, although the numbers under observation were considerable. It was noted that if the case were transferred back to the hospital wards in under seven days a relapse was liable to occur, but if they were kept over ten days

the return to the surgical ward was not followed by any untoward complication. The conditions of treatment in the bell tents were by no means ideal; the tents were often leaky, and in winter were cold and wretched. It seems to be hardly appreciated at the present time how important the open-air treatment of septic cases has proved in the past.—I am, etc.,

London, W.1, Feb. 19. DENNIS EMBLETON.

Treatment of Boils and Carbuncles

SIR,—I read with great interest in the *Journal* of February 19 (p. 400) Mr. John Hosford's article on boils and carbuncles, and especially the section of his article dealing with carbuncle in diabetes. For some years past in such cases I have with great success, in addition to getting the urine sugar-free, used a lotion which is composed of syrup. simplex, usually with a little brilliant green:

℞ Brilliant green ... ... gr. ss
Syrup. simplex ... ... ad ʒ iv

It is a good stimulant to lymphatic activity, and soon produces a much more healthy-looking granulation area, and when the slough has separated healing is much more rapid in such cases than I can obtain by any other method. I usually soak a piece of lint in the lotion of the size of the sore part and cover with cotton-wool and a moderately firm bandage, and redress once or twice a day.

I believe the action is mainly that of the sugar, which is hypertonic, and also probably makes up for a deficiency of sugar in the parts, which retards active cell proliferation. It is equally valuable in the sloughing type of ulcer which one finds in many diabetic cases, but I have not found it do any good when so applied to parts where there is a threatened slough and the skin is not broken. I would be interested to know if others get similar results.—I am, etc.,

London, S.E.6, Feb. 18. LAWRENCE WEIR BAIN.

Cauterization of the Cervix

SIR,—Electrotherapeutists who deal with gynaecology welcome the article of Professor James Young (*Journal*, January 15, p. 105), and also the letter of Mr. E. Lawton Moss (February 12, p. 361), which drew attention to certain after-results of strong cauterization applications to the cervix. Cervical erosion is less radically dealt with by copper ionization. Enlarged, inflamed, and everted cervical lips usually become normal in one or two months after a few applications of local ionization; some cases are hastened by a few doses of pelvic diathermy. The patient does not require to lie up, but can continue at work during the course of treatment. On Christmas Day the *Lancet* published my conclusions on the electrical treatment of pruritus and eczema vulvae: in that article I describe a case sent to me by a leading gynaecologist who had been consulted as to the advisability of amputation of the cervix. This patient had had pruritus for many years, caused by a slight clear discharge. For this the cervix had been so severely treated with coagulating diathermy that it had become hard, like wax. As the discharge remained unaltered it was evident that it originated from above the cervix. Only after many attempts did I succeed, by using the negative pole and vaginal diathermy, in passing an electrode through the hardened canal into the body of the uterus. Intra-uterine ionization arrested the discharge, and at the same time the dysmenorrhoea was cured for good.—I am, etc.,

London, W.1, Feb. 15. AGNES SAVILL.

Temporary Sterilization by X Rays

SIR,—It would appear from Dr. Louisa Martindale's letter in the *Journal* of February 19 (p. 419) that the only, or at any rate the most important, disadvantage of temporary sterilization by *x* rays for contraceptive purposes is the uncertainty of the duration of the sterility. This is far from being the case. There are two much more serious objections to this form of treatment, which in my opinion render its use totally unjustifiable in healthy women, at any rate in the second and third decades. The first of these is the fact that every successful sterilization, whether temporary or permanent, is followed by more or less severe menopausal changes. Of these the well-known vasomotor symptoms are only the least important, the psychological changes, though less obvious and more insidious in their development, often leading to great and prolonged unhappiness. The psychological changes are the more marked the younger the patient, and I agree that they become quite slight after the age of 35 or so, but even then I submit that their production is unjustifiable in a healthy woman.

The second objection is the possibility of injury to the germ cells resulting in abnormalities in the children born after recovery from temporary sterilization. It is true that a large number of children, born to mothers who have been temporarily sterilized, have been investigated and no undue incidence of abnormality observed. It should, however, be remembered that in animals abnormalities may not appear until the second and third generation, and such investigations cannot be regarded as complete until at least two further generations have been observed.

My own view is that *x*-ray or radium sterilization should not be carried out below the age of 38 except as an alternative to oophorectomy or as a life-saving procedure for severe and persistent functional haemorrhage. This excludes its use below this age, not only as a contraceptive measure but also in operable fibroids.—I am, etc.,

London, W.1, Feb. 21. WALTER M. LEVITT.

Contraceptives and Fertility

SIR,—It is emphatically contrary to the experience of the Constructive Birth Control Society's clinics that sterility is engendered by the use of the contraceptives they advise. It is not the practice at these clinics to teach the patient to put a soluble pessary *within* the cap next the cervix but merely to place it in the vagina, nor is jelly put in or around a cervical cap. During the preliminary examination of the patient, should any factor be noted which suggests there will be difficulty in conception she is told of it and advised to consider founding her family first and use contraceptives later, as should she prove to be sterile she might incorrectly attribute to contraceptive methods her inability to conceive.

It is noteworthy that patients who have failed with their contraceptive appliances—that is, become pregnant—nearly always admit to the omission of one or both of the prescribed precautions on some occasion because they "thought once wouldn't matter," whereas if they acquired sterility through the habitual use of their contraceptives this reasoning would hold good.—I am, etc.,

London, W.1, Feb. 19. E. FISHER, M.D., D.P.H.

SIR,—The statement that "the use of contraceptives early in marriage is inimical to pregnancy" is one of very great importance, both to the individual practitioner who

advises on contraceptive technique and to the principles and teaching of the National Birth Control Association.

For many newly married women it is imperative that pregnancy should be postponed, as, for instance, when the woman is working and her husband is unemployed. The contraceptive measures advised at the clinics are considered essentially to be prophylactic, both for avoiding "anxiety states" and, of utmost importance, for combating the high incidence of criminal abortion with its subsequent morbidity and sterility. Some of the clinics have maintained records of the "condition of cervix" over a period of many years. Nulliparous and multiparous patients return at six-monthly intervals for supervision and for general advice upon spacing their pregnancies. The quotations offered by Mr. G. H. Alabaster concerning the relation between endocervicitis, erosion, and sterility (*Journal*, February 19, p. 419) seem to add confusion to the original issue.

If there were any evidence that the methods advocated by the N.B.C.A. did, in fact, induce these conditions (or influence fertility in any other way) these suggestions would become a matter of gravest concern. As this has not been evident among large numbers of control cases, the contention does not appear to be relevant.—I am, etc.,

London, N.W.1, Feb. 21. JOAN MALLESON.

Time for Midwifery

SIR,—May I reply to a letter by Dr. John Elam (*Journal*, February 5, p. 310) asking why nothing has been done regarding maternal mortality? I do not know what has been done in New Barnet, but I can assure him that my county has not been idle, and that we have four services in good working order: (1) the general practitioners' antenatal service; (2) clinics all over the county where expectant women may receive dental treatment and free milk; (3) beds, ready to receive the cases, are available in the special and general hospitals; and (4) consulting obstetricians are prepared to attend at once on the request of the general practitioner, and are paid for by the county authorities. Dr. Elam also suggests that women doctors have a special aptitude for midwifery and that all cases should be handed over to them. Having myself attended more than 2,000 cases, I cannot believe that this suggestion was made seriously. If Dr. Elam would get his prospective mothers to live healthy outdoor lives, and see that they were not worried by too much pelvimetry, vitamins, or headlines in the yellow press, the maternal mortality problem would solve itself.—I am, etc.,

Torquay, Feb. 14. HORACE ROSE.

SIR,—It is unfortunate that your correspondent Dr. Robert Anderson (*Journal*, February 19, p. 419), before criticizing my suggestion that want of time is the basic cause of bad midwifery, did not give a little time to a study of the Maternal Mortality Report of 1937. This report I cannot quote at length in your columns, but Dr. Anderson would find it worth close study. We read, for example, on page 189, that certain essential examinations in the ante-natal period were found to have been infrequent and irregular. The Departmental Committee tells us that "there is too little ante-natal supervision, and what there is is too perfunctory to deserve the name." The Scottish Report says: "It is obvious that ante-natal care falls far short of what might reasonably be expected." It is not suggested that practitioners did not know how to do ante-natal work but that they did not give sufficient *time* to ante-natal work. On the other hand, comment is made on the good work done at municipal clinics, where the maternity officer did have time.

Turning to the conduct of the confinement (p. 191) we read that "there was evidence of hurried midwifery and of premature interference, etc." According to the Scottish Report, "one of the most disquieting features of present-day practice is hurried and unnecessarily meddlesome midwifery." Comment, too, is made in both these reports on "failed forceps" cases. Hurried midwifery, premature interference, what is this due to but want of time? So long as doctors and midwives are expected to work twenty-four hours a day for seven days a week, just so long will the disasters and mistakes of midwifery occur. Fatigue plays an important part in the cause of accidents. There is ample evidence in the 1937 report that, be the reason what it may, practitioners do fail to give sufficient time to midwifery. The suggestion that practitioners will not take time over their cases is not mine, but is made by the writers of the report. Many people have found the report objectionable, especially the women sufferers. It recommends that "these general practitioners who undertake obstetric work should be interested, experienced . . . and have sufficient time for unhurried work" (p. 193). By all means train the student and the young practitioner in obstetrics, but without time to give to the work knowledge is in vain.

Your correspondent appears to deplore the fact that so much work has been handed over to the midwives, yet it is generally recognized that the conduct of the normal confinement is best left in the hands of the competent midwife. Those of us who are attached to maternity hospitals constantly see cases coming in of which we are ashamed. If we are to retain the confidence of the public these cases must cease. There is urgent need for drastic reform of our maternity services, and it is better that we should do this ourselves rather than wait for an exasperated public to do it for us. We must hope that there are practitioners who have more constructive proposals to make towards this end than your correspondent. —I am, etc.,

New Barnet, Feb. 19. JOHN ELAM.

Asthma and Sensitivity to Aspirin

SIR,—The leading article on drug allergy in the *Journal* of February 5 (p. 289) is most interesting and valuable, especially the reference to sensitivity to aspirin. It is taking the profession a long time to realize the importance of the fact that aspirin is not the harmless drug it is commonly supposed to be in certain cases of asthma. As long ago as August, 1919, you published a letter of mine which said:

> "It is a fact not sufficiently well known that a patient with a low blood pressure and nasal polypi cannot safely take aspirin. Consequently there is great danger in giving aspirin indiscriminately in cases of asthma. It is always risky to use if the patient has, or has had, nasal polypi, but if the patient has a high blood pressure unpleasant results are not so likely to happen."

In spite of this and other repeated warnings of mine,[1] and of others, the risk of giving aspirin in these cases is not properly appreciated, as is shown in the following instance. I warned a patient, who had asthma with nasal polypi and a low blood pressure, that she must never take any aspirin. She told me that she was well aware of the fact because she had been made very ill by being given aspirin, in spite of her protestation that she could not take it, at five different hospitals to which she had applied

[1] *British Medical Journal*, August 29, 1925, and *Asthma and its Treatment*, 1932.

for treatment. On the last occasion she was unconscious for ten hours after taking 10 grains of this drug.

Another important point is that all rhinologists do not yet realize that it is disastrous to remove polypi in an asthmatic subject who is aspirin-sensitive. The question as to when to operate for the removal of polypi in asthmatic subjects has been clearly discussed in a paper by Clement Francis in the *Practitioner* of September, 1929. I have seen many cases in which such patients have become asthmatic wrecks as a result of having polypi removed, and the more complete the operation the more desperate does the asthmatic condition later become. In your article you quote H. F. Buchstein and L. E. Prickman as stating "there was a high incidence of nasal polypi in patients extremely sensitive to aspirin." I am convinced that in *all* asthmatic subjects who are sensitive to aspirin there is a "nasal polypus element." No polypi may be apparent at first, but in such cases polypi invariably show themselves after a time.—I am, etc.,

London, W.1, Feb. 13. ALEXANDER FRANCIS.

Infantile Pyloric Stenosis

SIR,—I have read with interest Dr. J. Vernon Braithwaite's article on the treatment of pyloric stenosis (*Journal*, February 12, p. 334). In 1936 I published a consecutive series of fifty cases of pyloric stenosis treated at the Infants' Hospital with a mortality of 2 per cent. (*Post-Grad. Med. J.*, 1936, **12**, 414).

The one death was due to a streptococcal infection which had nothing to do with the operation. I cannot agree with Dr. Braithwaite that eumydrine is the treatment of choice for pyloric stenosis, for the following reasons: (1) the operation for pyloric stenosis performed according to the technique I have previously described is one of the safest operations in surgery; (2) it is performed without previous preparation of the patient, and the duration of the child's stay in hospital need only be three to five days, recovery being rapid and uneventful.

Eumydrine necessitates a prolonged period of medical treatment and hospitalization, which last is very fatal to young babies. Quite apart from the pyloric stenosis for which the patient was admitted, mere hospitalization of a baby for a period of two and a half weeks, the shortest time, to twelve weeks, the longest time, mentioned by Dr. Braithwaite as necessary to cure pyloric stenosis by medical treatment alone carries with it a very definite mortality. Some babies treated by eumydrine fail to respond, and either die or come for operation in a half-starved and emaciated condition. Although I think a baby is never too ill to be operated upon for pyloric stenosis, I feel that it is definitely dangerous to starve young babies for long periods, even as part of medical treatment.—I am, etc.,

London, W.1, Feb. 14. DAVID LEVI, M.S., F.R.C.S.

Trauma and Progressive Muscular Atrophy

SIR,—The correspondence on Dr. G. E. Frederick Sutton's interesting case (*Journal*, January 29, p. 225) prompts me to call attention to Speransky's researches into the results of trauma to the nervous system (1935, *A Basis for the Theory of Medicine*, New York). He showed that after a standardized trauma to the nervous system in dogs certain trophic lesions developed. Not every animal so injured developed the lesions to the same degree; the subjects classified themselves into six groups: (1) rapidly fatal result; (2) illness followed by death; (3) illness followed by recovery and then relapses occurring at regular intervals; (4) illness followed by recovery; (5) no illness, but on a further trauma ("second blow") illness followed by death; (6) no tissue changes and immunity to further traumata. These variable results, following carefully standardized experimental procedures, demonstrate that there are, at least in dogs, a series of types of nervous constitutions. As progressive muscular atrophy does not invariably follow traumata, it appears reasonable to suppose that the patients developing it after trauma inherit a nervous system predisposed to this type of disorganization. These cases may be compared with those patients exhibiting general neurological manifestations following spinal anaesthesia (Critchley, 1937, *Medical Annual*, p. 33).

Dr. R. G. Abercrombie's cases of poliomyelitis following fractures (February 12, p. 359) are probably examples of the "second blow"; occurring during an epidemic, they were probably suffering from a latent virus infection of their nervous systems, which the second blow of the fracture precipitated into a full-blown infection. Corresponding experiments have been described by Speransky. Two members of his team induced in cats a mild form of tetanus by injecting tetanus toxin into the eye. After a mild illness eight out of nine cats recovered. Five days after spasmodic symptoms could no longer be elicited, a "second blow" (injection of bile into a sciatic nerve) was inflicted. The animals developed generalized tetanus, the relapse taking a more pronounced form than the original illness; practically all the animals died. I believe Speransky has presented convincing evidence that such injuries to the nervous system set in train a dystrophy of the nervous system which may have widely different results, depending on the individual nervous constitution.—I am, etc.,

Bristol, Feb. 14. FRANK BODMAN, M.D.

Correct Footwear

SIR,—From your annotation (February 5, p. 290) and the preceding correspondence it would appear that the following conclusions command general agreement: (1) that "incorrect" footwear causes a large amount of physical and mental disability; (2) that these disabilities are preventable and, when established, to some extent curable by "correct" footwear; (3) that something should be done in collaboration with the boot-and-shoe trade to encourage the public to adopt "correct" footwear; and (4) that a committee composed of medical and trade representatives might be set up to make a comprehensive study of the problem, including the accurate definition of "correct" and "incorrect" footwear.

Rational folk of my acquaintance know what they mean by "correct" footwear—namely, boots, shoes, slippers, etc., which serve the wearer's purpose without causing him (or her) any mental or bodily disability. Such footwear is made by at least one firm of manufacturers in this country, though it is sold only by certain, and a limited number of, "untied" retailers at prices beyond the means of many people.

From the private correspondence received since the publication of my former letter (December 25, 1937, p. 1302) it would appear that many doctors are deeply concerned at the prevalence of the "tied" retailers in their district, and at the difficulty of obtaining "correct" footwear now that the craftsman in his own business is almost a relic of the past. These observations, and the question of price, suggest to me that the representatives of the trade on any committee of inquiry which might be set up (and this would appear to be desirable) would be up against a far more difficult problem than that con-

fronting their medical colleagues. However long and arduous its labours, such a committee will have been worth while if it eventually produces recommendations acceptable to the trade and to the medical profession.—I am, etc.,

St. Albans, Feb. 10. TOM HARE.

Why "Post-anaesthetic" Pulmonary Complications?

SIR,—I have read Dr. G. R. Osborn's article (*Journal*, February 5, p. 279) with pleasure, and I hope some little profit, but I cannot accept all his assumptions, and I should like to question one of them in particular. He states early on in his paper that "inhalation anaesthesia does not predispose to pneumonia unless there is pre-existing lung disease." Apparently the surgeon is asked to take most of any blame which may be going, although, of course, in 95 per cent. of cases we do not wish to place the pneumonia to the credit of either party.

I submit, however, although I may be behind the times and old-fashioned, that inhalation anaesthesia still has a lot to do with pneumonia following operation. Cases of chest trouble, varying from a slight bronchial catarrh to actual consolidation, are often seen in healthy subjects whose chests were beyond reproach before an anaesthetic was administered.

If the surgical procedure is the main cause of post-operative pneumonias, how is it that some anaesthetics, such as ether, are more liable to cause such complications than others? Any inhaled irritant gas is a potential cause of lung disease, with pneumonia as a climax, and though chloroform, ether, nitrous oxide, and similar gases are obviously not as potent as chlorine, I for one would hesitate to regard them as above suspicion. I should imagine that any gas which irritates the lung alveoli, as inhalation anaesthetics do, is a powerful factor in causing trouble, and that any gas so used, since it is a mild poison, reduces the vitality, which in itself predisposes to pneumonia. If Dr. Osborn would alter his categorical statement to a fifty-fifty basis I might agree with him, but really we should not expect chloroform—a chlorine compound—to be above reproach in cases in which the lung tissue is concerned.—I am, etc.,

Woodley, Cheshire, Feb. 14. J. G. BENNETT, M.D.

Technique of Blood Transfusion

SIR,—I was interested to read "Recipient's" letter in the *Journal* of February 12 (p. 363), since it raises the important question as to the quantity and strength of citrate solutions used in blood transfusion. At present I am engaged in studying the effect on blood of different amounts of citrate, and also as to whether it is the ideal anti-coagulant. Although final conclusions have not yet been reached, there is ample experimental evidence to show how important it is that the citrate solution should be isotonic (3.8 per cent.) and added accurately, in the proportion of 10 c.cm. to each 100 c.cm. of blood, at the time of collection. In making transfusions free from reactions there are undoubtedly other factors concerned, some details of which I hope to publish in due course.—I am, etc.,

Norwich, Feb. 15. W. R. THROWER, M.D., M.R.C.P.

SIR,—In the *Journal* of January 29 (p. 241) Dr. H. F. Brewer describes the technique of blood transfusion using the interrupted method of withdrawing blood into a flask, citrating, and injecting into the recipient. From personal experience with the direct method I can recommend a far simpler technique, and a safer one as regards contamination. Further, cutting down for a vein is eliminated unless the recipient is so dehydrated as to be *in extremis*.

The materials required are an Unger machine and two large-bore needles, each having a circular shield at the hilt. The machine can be made immobile by tightening it on to the edge of a board, like a vice, the board lying transversely between donor and recipient for the support of their arms. A tourniquet is applied and the needles are inserted into the veins, the circular shields holding them in position. Rubber tubing connects the needles to the machine, which has four outlets. The remaining two outlets are for 20-c.cm. Record syringes, one for blood, the other for saline. By rotating the stopcock to the donor, the operator fills his syringe with 20 c.cm. of blood, gives a twist to the stopcock, and the blood is then injected into the recipient's vein. In order to keep the entire machine clear and to prevent clotting, about 20 c.cm. of saline are injected by the assistant, slowly, from the other syringe. In a 500-c.cm. transfusion about 20 c.cm. of saline will be used. I have never seen blood clot in the barrel, but as a prophylactic ether can be sprayed on the syringe. The entire routine is simple, there is no possibility of contamination, and the site of venepuncture heals in a day, leaving no trace. Also, the time is necessarily prolonged, a factor to the patient's advantage. I am certain that given a fair trial this method will meet with the approval of the profession.—I am, etc.,

Edinburgh, Feb. 12. NORMAN L. FREUND.

Hysterical Dermatitis

SIR,—Dr. Henry MacCormac's paper on autophytic dermatitis in the *Journal* of December 11, 1937 (p. 1153), prompts me to record the following two cases of self-inflicted dermatitis.

CASE I

This patient was admitted to Queen Charlotte's Hospital on November 11, 1937, for her second confinement. Her case was complicated by rheumatic mitral stenosis, well compensated. On November 13 the patient drew the nurse's attention to a single oval lesion on the lower and innermost quadrant of the right breast. The lesion was half an inch long, irregularly oval in shape, with erythematous base and outline and central superficial slough comparable to a second-degree burn. Close inquiry revealed no possibility of extraneous heat or irritant so far as could be ascertained; no fomentations had been applied. The lesion was treated with calamine lotion. On November 14 similar lesions were present on a circular plan, arranged around the areola, identical with the primary. On November 15 no further lesions were found on the right breast, but three identical lesions were present on the left breast. The rapid appearance and the character of the lesions raised the suspicion of a chemical irritant, but none could be incriminated. On this date the patient in the next bed was reported to have a similar lesion on the right buttock.

No definite abnormality of the nervous system could be detected, apart from increased tendon reflexes, absent palatal reflex, and an indiscriminate distribution of blunting of sensation to pin-prick, mostly on the upper arm and calves of legs.

CASE II

This patient had a normal pregnancy and puerperium. Four lesions, roughly oval in shape and arranged in a linear manner, were seen on the right buttock, with faint scratch excoriations in the intervening area. No further lesions were noted. Examination of the central nervous system exhibited increased tendon reflexes, absent palatal reflex, and typical glove-and-stocking distribution of anaesthesia to pin-prick, extending up to a hand's breadth above the knees and just below the elbows. Dermographia was particularly marked.

Dr. MacCormac kindly consented to see the patients, and said the cases were evidently self-inflicted lesions,

probably inflicted by a combination of acid irritant and nail trauma. On his advice the lesions were treated with flavine and paraffin and the patients were impressed with the importance of leaving the lesions strictly alone. After application of flavine the lesions healed with great rapidity.

The first patient was seen on December 1, 1937, and all the lesions were covered by a firm scab. No further lesions had appeared. The second patient did not report for inspection, but on inquiry the lesions were said to have healed.

No definite irritant was incriminated, but the patients had access to dettol 1 per cent. solution, and a lysol jar in which forceps were kept was normally placed on a table between the two beds.

I wish to record my thanks to Mr. Carnac Rivett for permission to publish these cases and to Dr. H. MacCormac for his help in the diagnosis and treatment. —I am, etc.,

London, S.E.5, Feb. 1. O. LLOYD, M.B., B.S.

Referred Pains arising from Muscle

SIR,—I read with much interest Mr. J. H. Kellgren's article on this subject in the *Journal* of February 12 (p. 325). By combining Dr. T. Stacey Wilson's mallet method of dealing with nodules with a previous injection of novocain into the fibrositic masses I have obtained results similar to those of Mr. Kellgren. The amount of novocain required is much less, the average dose being from 2 c.cm. to 5 c.cm. The results are immediate, and although I have not yet used this treatment for long and the number of patients is small, there has so far been no return of the pain.—I am, etc.,

Cheam, Surrey, Feb. 15. STUART GOLDHURST.

Recovery in the Spinal Cord

SIR,—My letter (February 5) was not intended to express dissatisfaction with Dr. J. Purdon Martin's statements, as I was unable to attend his lecture, but to correct the impression which the report gave. As he now makes clear (February 19) the "rightful position" of interference with the circulation is "on an equality with, not subordinate to, damage to the structure of the cord." Dr. Martin adds that "ischaemia is at most only the means by which more primary factors exert their influence," nevertheless its treatment by every method at our command is theoretically important and clinically urgent.—I am, etc.,

Northfield, Birmingham, Feb. 21. F. A. PICKWORTH.

Dangers of Immune Globulin

SIR,—The prevention or modification of measles by the use of convalescent or adult serum is now established as a useful procedure; but the inconvenience of preparation and the absence of a commercial supply have probably led medical men to show interest in the preparations of immune globulins, prepared from placentae, which are now on the market. These are represented as affording the means of complete control of measles infection, and are recommended by the makers for universal use, with very little insistence on unpleasant results from their use.

A limited experience of these products has been sufficient to show me that there are disadvantages associated with them of which other practitioners may be as ignorant as I was myself. The circulars of the manufacturing chemists, which provide us general practitioners with our postgraduate instruction in therapeutics, cannot be expected to do anything but minimize the drawbacks of the preparation advertised; but to describe the possible reactions produced by placental extracts as "local irritation and also rise of temperature, with malaise, in some subjects," is apparently an understatement. Two recent patients of my own who were given doses appropriate to their ages according to the maker's recommendation suffered from such serious collapse as thoroughly to alarm both the parents and the medical attendant and to make them feel that the cure was worse than the disease. Within an hour of the injection the patients vomited, and when I saw them were lying in a condition of semi-coma, cold, pale, and almost pulseless; this condition lasted about two hours and was followed by pyrexia, with such pain at the site of injection and down the leg as to prevent sleep far into the night. Next day there was still slight fever and considerable pain, though both patients had obviously recovered.

We are accustomed to feeling secure from serum-sickness and anaphylaxis when using convalescent serum, and I feel that my experience, though perhaps exceptional, is worth recording as a warning that placental extracts cannot be used quite so light-heartedly.—I am, etc.,

Wimbledon, Feb. 20. GARETH A. EASON.

Coproliths and Appendicitis

SIR,—In the issue of January 29 (p. 227) Dr. A. M. Spencer stresses the importance of coproliths in the aetiology of acute appendicitis, apparently on account of the 70 per cent. incidence in what appears to be a series of twenty cases. In a consecutive series of 528 appendicectomies I found the incidence of coproliths to be as follows:

In 47 incidental appendicectomies during operations on other viscera, six instances—12.8 per cent.

In 198 indubitably acute cases (where perforation, gangrene, or an abscess was present), eighteen instances—9 per cent.

In 114 cases where the appendix was found not to be the cause of symptoms, fourteen instances—12.3 per cent.

In 169 chronic cases, twenty-seven instances—16 per cent.

While coproliths therefore seem to me aetiologically unimportant, their presence may often determine the site of ulceration and perforation in acutely inflamed appendices.—I am, etc.,

London, Feb. 14. MALCOLM BAILLIE, F.R.C.S.

Treatment of Bacillary Dysentery

SIR,—I have read the article and letters on bacillary dysentery that you have recently published with interest, as I see a great many cases here in Calcutta and have had a *Flexner* infection myself.

I am certain that the old purgative treatment—giving drachm doses of magnesium and sodium sulphate every four hours or so until the stools become almost completely watery—is wrong. In mild cases, with the patient complaining of abdominal pain and tenesmus and of having a stool, say, every hour, symptoms are made worse, and in severe cases, especially in old people, it is terribly drastic. Most authorities now agree, moreover, that although this treatment flushes the bacteria, toxins, blood, and pus from the lumen of the large intestine, and although it may reduce the oedema of the mucous membrane, it does not alter the course of the disease appreciably. I think that patients can usually be left to get rid of the contents of the large bowel themselves, although some may require a very light dose of salts at one stage or another of the disease process.

But apart from all this, surely ordering purgative treatment in bacillary dysentery is breaking one of the most sacred basic laws of sound therapeutics? Is it not definitely stimulating an inflamed organ—as bad a crime as exercising an acutely inflamed joint, for instance, or giving diuretics to a case of acute nephritis? The patient and the patient's bowel obviously need to be given rest with opium and belladonna, so that the ulcers can be given time to heal and specific treatment—for example, with bacteriophage—can have a chance to work.

In my experience results obtained by this method are sometimes almost spectacular, and nearly all cases seem to respond far more rapidly than those that are given frequent purges.—I am, etc.,

Calcutta, Feb. 15. FRANK MCCAY.

Acute Appendicitis

SIR,—With reference to the article of Dr. A. M. Spencer on the aetiology of acute appendicitis in the *Journal* of January 29 (p. 227) the following case history is worthy of record.

The patient was a male cook aged 34. Five months before operation for appendicitis on January 19, while he was trying to inflate the subcutaneous tissue of a sheep through a cut in the skin of the leg, to facilitate skinning the carcass, he felt that he swallowed some of the hair. A few months later he had an attack of severe colicky pains all over the abdomen, which subsequently localized in the right iliac fossa. The attack was accompanied by nausea but no vomiting. There was a rise of temperature. The clinical examination some days after the attack revealed an appendicular mass. Operation was performed six weeks later.

The pathological report of the specimen, by Dr. Anise Onsi Bey from the laboratories of the Ministry of Health, was: "Purulent appendicitis; appendix contained foreign matter (hairs) in the lumen and also embedded in the tissue under the mucosa, showing distinct reaction around the hairs."

—I am, etc.,

Demerdache Hospital, Cairo, Feb. 11. H. STIVEN.

The Radiologist's Range of Service

SIR,—I am in entire agreement with Mr. H. Osmond Clarke (*Journal*, February 5, p. 310) when he says:

"But a radiologist has neither the special training nor the wide experience which enables him to speak with authority on clinical end-results. . . . Thus it is quite unfair to him and to the patient that he should be asked to express any opinion on the treatment of a fracture."

In reply to this letter the writer who hides behind the hieroglyphic B.M./MC5W (February 19, p. 422) says:

"I would like to point out that in fact a radiologist does see patients at all stages, and that he sees at least as many films as the rest of his hospital staff put together and, supposing that he has any intelligence at all, he gets a very good idea not only of the efficacy of various surgical performances but also of the judgment and ability of the surgical performers."

Now I am quite prepared to believe that this writer sees *x*-ray films of fractures at many different stages, including the time when firm union has occurred. After this it is rare for further films to be taken, but it is not until after this that the end clinical result is obtained. The writer apparently judges the result of a fracture by the radiographical appearance, forgetting that the functional result is what really counts. This is a pity and the very reason why radiologists' advice on the treatment of fractures should not be sought, especially when every effort is being made to teach our students that good function is the most important thing in the treatment of fractures.

Dr. F. Hernaman-Johnson in the same issue (February 19, p. 422) appears to imply that a general practitioner, before calling in a consulting surgeon in a fracture case, should talk the matter over with a radiologist. Radiologists give invaluable help in the diagnosis of fractures, but why they should be consulted in the matter of treatment I cannot imagine. Surely it is better for a general practitioner to talk things over with a fellow general practitioner.—I am, etc.,

London, W.1, Feb. 19. JOHN HOSFORD.

The Problem of the Final M.B., B.S.Lond.

SIR,—The problem of the M.B., B.S. of London University is weekly becoming more and more the problem not only for the members of the Conjoint Board but for every member of the medical profession who is not a holder of the London M.B. We cannot afford to tolerate the exaltation of this degree at the expense of other qualifications. For weeks I have been awaiting the onslaught of the offended legions upon its haughty holders. How much longer must I wait?

Comparisons are odious, but if made at all should be made for all, at least when made in public. What a pretty picture a comparative table of the merits of all the university degrees would make! But it would not be "cricket," nor does it seem to my humble intelligence to be "playing the game," to allow invidious comparisons between the London M.B. and the M.R.C.S. to appear in a public journal, and still worse in one which is supposed to be upholding the interests of the whole of the medical profession. It would seem that the object of the "highbrows," apart from enhancing their own prestige, is to make it more and more expensive and difficult for middle-class parents to provide their children with a livelihood. The birth rate is falling, and they wonder why! If they honestly think that ever-rising standards of education are in the best interests of the race I would ask them to think again, and think earnestly and disinterestedly.

The time has arrived to put a stop to the "cut-throat" competition to add to our names letters which at present mean little to the public but may soon mean so much that they will demand nothing less than an F.R.C.S. for first-aid work. We don't want to become "sandwich men" with honour degrees on strike for refuse collectors' wages. Qualifications which satisfy the General Medical Council should satisfy all and no additions should be encouraged. If advertising is undesirable in any form it is more so in this form.

Is it really right to deprive children of the joy of childhood and to fill their lives with work and worry? Are examinations in their present form the best means of detecting and rewarding the best citizens or are they merely or mainly detectors of a retentive memory and little else? Has the time not arrived to assess and give credit for other and more important qualities and to reduce the time spent in accumulating facts mostly forgotten or out of date when they are wanted? Finally, when is "boosting" the London M.B. not advertising?—I am, etc.,

Gosport, Feb. 3. G. W. FLEMING.

SIR,—I have followed keenly the letters concerning the problem of the final M.B., B.S.Lond. It seems to me that the opinion of the young graduate should be voiced.

In defence of the young practitioner I would like to reply to Dr. C. S. Staddon's letter in the *Journal* of February 5 (p. 309). If, as has been stated, a fair number

of those who take the conjoint examination *could* pass the M.B., B.S., why do they not do so? Is it not that they embarked upon medicine without a matriculation standard of general education, or else that they failed to stay the course?

It was somewhat disconcerting to read of the shortcomings of graduated assistants. From the letter in question one gathers that they are completely incapable. I suggest that the young assistant fresh from a house job is often better versed in modern technique than his employer. For example, he has usually been dealing with more cases daily that require minor surgical procedure than the general practitioner deals with in a month. In fact he often leaves his hospital post with the impression, judging from cases he has seen in the casualty department, that many practitioners are either incapable or lazy. Incidentally, the practitioner should surely show some discrimination when engaging an assistant.—I am, etc.,

BASIL S. KENT, M.B., B.S.Lond.

Crouch End, N.8, Feb. 8.

Obituary

HERBERT LUND, M.B., F.R.C.S.

We regret to announce the death on February 18, in his eightieth year, of Mr. Herbert Lund of Manchester.

The son of Edward Lund, F.R.C.S., one-time professor of surgery in the Owens' College, Manchester, he was born in 1858. Edward Lund moved from Surrey to Manchester and became a leader in the surgical life of the town, and continued in activity for many years. He introduced Listerism into the Royal Infirmary when others remained aloof and scornful of its reputed virtues. Herbert Lund took his B.A. in the Natural Sciences Tripos at Cambridge in 1881 and the M.B., B.Ch. five years later. In the meantime he qualified from Guy's Hospital with the M.R.C.S. in 1885, and after holding resident posts in the hospital he settled in Manchester. The F.R.C.S. was received in 1887, and in 1889 he was appointed honorary assistant surgeon to Salford Royal Hospital. He continued in active work there until his sixtieth year in 1918, when by regulation of the hospital he joined its consulting staff. In the war of 1914–18 he was attached to the 2nd Western General Hospital with its headquarters in Manchester, and later was a referee on the War Pensions Board in Salford. Useful service was done for many years as medical referee to Lancashire County Courts under the Workmen's Compensation Act. Although he kept the name of Lund alive in Manchester and Salford, he was of a somewhat retiring nature and did not take such a leading part in its consultant and scientific life as his father, who was twice president of the Medical Society (1863 and 1881); secretary from 1850 to 1853, and one of its most useful members.

Herbert Lund published some papers on the surgical treatment of diseases of the urinary organs. He was a keen and extensive stamp collector and a member of the local Philatelic Society. He had been a member of the British Medical Association for twenty-eight years, and when the Association held its Annual Meeting at Manchester in 1902 he acted as secretary of the Section of Surgery.

We regret to record the death on February 10 of Dr. JOHN COURTENAY MACWATTERS at his residence in Almondsbury, near Bristol, at the age of 64. He entered the Bristol Medical School in 1891, and obtained the diplomas M.R.C.S., L.R.C.P. five years later. In 1897 he was appointed to the newly created post of resident obstetric officer to the Bristol Royal Infirmary, where he was also house-physician and clinical assistant. About 1901 he removed to Almondsbury, where he had lived ever since, taking a long and very active interest in Almondsbury Memorial Hospital, of which he was medical officer. He built up a large general practice and was very popular throughout the district. At one time he devoted himself to the possibilities of therapeutic immunization, contributing articles on this subject to the *British Medical Journal* and other periodicals. An article by him on the vaccine treatment of pyorrhoea appeared in the *Journal of the British Dental Association* in 1913. Dr. MacWatters had been a member of the British Medical Association since 1899.

Mr. ERNEST CHARLES ARNOLD, F.R.C.S., who died on February 10 at his residence in Westbourne Road, Forest Hill, at the age of 77, had been a member of the British Medical Association for over forty years. He was a medical student at St. George's Hospital, graduating M.B.Durham in 1886 and obtaining the diploma F.R.C.S. in 1888. He had studied also in Vienna and Berlin, his special interest being ophthalmology. At St. George's Hospital he held the posts of senior assistant demonstrator of anatomy, ophthalmic assistant, and house-surgeon. Other appointments held by him earlier in life were those of out-patient officer to the Royal London Ophthalmic Hospital and refractionist to the Royal Westminster Ophthalmic Hospital. He was ophthalmic surgeon to the cottage hospital in Welwyn Garden City and ophthalmic medical officer for out-patients to Queen Mary's Hospital, Stratford. Mr. Arnold was for some time in the service of the London County Council as an ophthalmic officer. He was a member of the West Kent Medico-Chirurgical Society, and during the war held a commission as captain R.A.M.C.

Dr. FRANK PATTERSON, F.A.C.S., Leader of the Conservative Party in British Columbia and of the Opposition in the Legislature, died in Vancouver on February 11 at the age of 61. He graduated at McGill University in 1898, and subsequently specialized in bone diseases, becoming widely known for his work among crippled children. He held a commission during the war. He was a member of the Canadian Medical Association, the North Pacific Surgical Association, and was elected a Fellow of the American College of Surgeons. After a very full professional life Dr. Patterson turned his attention to politics, being elected party leader eighteen months ago and to the Legislature last year. His work as Leader of the Opposition during the last session was conducted under the great handicap of serious illness.

Dr. HENRY ANGUS, who was medical officer of health for Bingley, Yorks, for over thirty years before his retirement in 1933, died at his home on February 14, aged 74. A medical student of Aberdeen, who graduated M.B., C.M. in 1886 and M.D. in 1898, he played a large part in helping to raise the standard of health in the district which he served. He was closely connected with Bingley Hospital for many years, and during the war worked at Morton Banks War Hospital. Dr. Angus was a former president of the Bradford Medical Society, of which he had been a member for nearly fifty years, and was an honorary life member of the St. John Ambulance Association.

Mr. ROBERT MARSHAL GOING, F.R.C.S., late of Littlehampton, died at his residence in Tonbridge on February 14. He was the son of the late Archdeacon Going of Killaloe, and was born in 1867. He was educated at St. Columba's College, Trinity College, Dublin, and the London Hospital. Having taken the L.M. at the Rotunda Hospital in 1890, he graduated M.B., B.Ch., B.A.O. in 1891, obtained the diplomas M.R.C.S., L.R.C.P. in 1896, and proceeded F.R.C.S. in the next year. In 1891 he was

house-surgeon to the Adelaide Hospital, Dublin, and later he served as surgical clinical assistant at the London Hospital. At Littlehampton he built up a successful practice and held the appointments of surgeon to the Littlehampton Hospital, Arundel Hospital, and the West Sussex County Mental Hospital. He had been visiting surgeon to the Graylingwell War Hospital and medical officer in charge of Slindon House Red Cross Hospital, and was latterly consultant surgeon to the Arundel Hospital. He had been a member of the British Medical Association since 1891.

Rear-Admiral CARY T. GRAYSON, M.D., chairman of the American Red Cross and of the International League of Red Cross Societies, died in Washington on February 15 at the age of 59. The son of a Virginian doctor, he had a most distinguished career in the service of the U.S.A. Government until his retirement from the Navy ten years ago. He had been the medical attendant and intimate friend of three Presidents of the United States—Theodore Roosevelt, William Howard Taft, and Woodrow Wilson.

The death is announced, at the age of 86, at Pau, of Dr. DOLERIS, who in 1924 was President of the French Academy of Medicine. His interests were wide; he made his mark in medicine as a gynaecologist, but he also played a distinguished part in scientific agriculture, and he represented his constituency in the French Parliament between 1921 and 1924. The late Dr. LE TELLIER was at one time President of the Ligue Française Homéopathique, and in 1933 he was the President of the International Homoeopathic League.

The following well-known foreign medical men have recently died: Dr. RICHARD HERMANN JAFFE, an eminent pathologist and bacteriologist of Vienna, aged 50; Geh. San. Rat Dr. STOUDER, for many years leader of the Bavarian medical profession; Dr. OTTO KREN, a distinguished Viennese dermatologist; Dr. M. BOGDUNOVIC, professor of gynaecology at Belgrade; Dr. LÉON BELLIN, the Paris oto-rhino-laryngologist, aged 64; Dr. RAYMOND SABOURAUD, the eminent Paris dermatologist and great authority on parasitic diseases of the skin, especially ringworm, aged 73; and Professor WERNER KÖRTE, permanent secretary of the German Society of Surgery and an authority on the surgery of the pancreas and bile ducts.

Mr. HARTLAND S. WRIGHT, who died on February 16 in his ninetieth year, was actively associated with the business of John Wright and Sons Ltd., the Bristol printers and publishers, for over seventy years, and had been chairman since the incorporation of the company.

Universities and Colleges

UNIVERSITY OF OXFORD

In Congregation on February 22 the Regius Professor of Medicine, Sir Farquhar Buzzard, proposed that the degree of Doctor of Medicine be conferred by decree of the House upon the following four newly appointed Professors:

H. W. B. Cairns, Fellow of Balliol, Nuffield Professor of Surgery.

R. R. Macintosh, Fellow of Pembroke, Nuffield Professor of Anaesthetics.

J. Chassar Moir, Fellow of Oriel, Nuffield Professor of Obstetrics and Gynaecology.

J. A. Gunn, Fellow of Balliol, Nuffield Professor of Therapeutics.

The House approved the conferment of these degrees.

UNIVERSITY OF CAMBRIDGE

At a congregation held on February 19 the following medical degrees were conferred:

M.B., B.CHIR.—*S. B. Darbishire, *E. B. Hacking, *M. Williams, L. H. Cane, H. G. W. Hoare, J. M. G. Wilson, G. Sheers, R. McK. Miller.

M.B.—*S. A. Propert, *G. L. Foss, R. E. Rodgers.

* By proxy.

The Professor of Physiology announces that a public lecture will be given in the Lecture Theatre of the Physiological Laboratory on Thursday, March 10, at 5 p.m., by Professor A. P. H. A. De Kleijn of the University of Amsterdam. The subject of the lecture is "Some Remarks on Vestibular Physiology."

UNIVERSITY OF LONDON

UNIVERSITY COLLEGE

A special University Lecture in biochemistry on "The Role of Dicarboxylic Acids in Metabolism" will be given at University College, Gower Street, W.C., by Dr. P. E. Verkade, professor of chemistry and chemical technology in the Nederlandsche Handels-Hoogeschool, Rotterdam, on Thursday, March 10, at 5 p.m. The lecture, which will be delivered in English, has been arranged under a scheme for the exchange of lecturers between England and Holland. It is addressed to students of the University and to others interested in the subject, and will be illustrated with lantern slides. Admission is free, without ticket.

UNIVERSITY OF LEEDS

Dr. M. J. McGrath, medical superintendent of the West Riding Mental Hospital, has been appointed lecturer in mental diseases.

UNIVERSITY OF EDINBURGH

The Senatus Academicus, on the recommendation of the Faculty of Medicine, has awarded the Cameron Prize for 1938 to Karl Landsteiner, M.D., member of the Rockefeller Institute for Medical Research, New York; and the Straits Settlements Gold Medal to Thottakat Bhaskara Menon, M.D., M.R.C.P.

The Services

ARMY MEDICAL SERVICES

The War Office announced on February 21 that the King has approved of the following promotion and appointments:

Colonel F. Casement, D.S.O., late R.A.M.C., Deputy Director-General, Army Medical Services, at the War Office, to be promoted to the rank of Major-General and to be appointed Deputy Director-General of Medical Services, Southern Command, with effect from April 15, in succession to Major-General O. Ievers, C.B., D.S.O., K.H.S., late R.A.M.C., who will vacate the appointment on completion of four years' service as Major-General.

Colonel O. W. McSheehy, D.S.O., O.B.E., at present Assistant Director of Medical Services, Home Counties Area (West) at Woolwich, to be Deputy Director-General, Army Medical Services, in succession to Colonel Casement.

DEATHS IN THE SERVICES

Squadron Leader RONALD ELTRINGHAM ALDERSON, R.A.F.M.S., was killed on February 18 near Athlit, south of Haifa, Palestine, when the taxi in which he was travelling was fired on by a party of bandits, a lady travelling in the same car being also dangerously wounded. He was educated at Durham University, where he gained a University scholarship in 1922, the Goyder and Philipson scholarships in 1927, and graduated M.B., B.S. in 1927. After filling the posts of house-surgeon at the Royal Victoria Infirmary, Newcastle-upon-Tyne, and medical officer of the Ministry of Pensions Hospital at Newcastle, he entered the Royal Air Force, and at the time of his death was serving in the R.A.F. General Hospital for Palestine and Transjordania, to which he was posted as squadron leader on March 14, 1927.

Lieutenant-Colonel ALFRED THOMAS IRVINE LILLY, R.A.M.C. (ret.), died at Ealing on February 13, aged 76. He was born at Hingoli in the Deccan, India, on September 8, 1861, was educated at St. George's Hospital, and took the M.R.C.S., L.R.C.P. in 1884. He entered the Army as surgeon on January 31, 1885, became lieutenant-colonel after twenty years' service, and retired on December 28, 1917. He served in the South African War from 1899 to 1902, taking part in the operations in the Orange Free State, the Transvaal, and Cape Colony, including the actions at Belfast and Lydenburg, and received the Queen's medal with three clasps and the King's medal with two clasps. He also served in the war of 1914–18.

Medical Notes in Parliament

Both Houses of Parliament this week debated foreign policy on the resignation of Mr. Eden from the Secretaryship of State for Foreign Affairs.

In the House of Lords on February 17 the Divorce and Nullity (Scotland) Bill passed through committee. On February 22 in the same House the Population (Statistics) Bill and the Blind Persons Bill, which passed the Commons on February 17, were read a first time.

By 150 to 198 the House of Commons carried on February 16 a motion proposed by Mr. Leach which called for a committee to inquire into the practicability of granting a pension of 10s. weekly to spinsters at 55 years of age.

The National Health Insurance (Amendment) Bill was read a second time in the Commons on February 17. Sir Kingsley Wood explained that it was intended to preserve to certain persons in "family employment" the right to a free insurance period and the option of becoming voluntary contributors.

Dr. Haden Guest moved the second reading of the Bakehouses Bill in the House of Commons on February 18. The object of the Bill is to prohibit night work in bakehouses. He said the men worked in dust, high temperature, and glaring light which affected their eyesight. The Registrar-General reported that there was among bakers a high death rate from phthisis. The Bill was read a second time by 147 to 126.

A conference between dental practitioners and the Parliamentary Medical Committee was arranged for February 24.

Parliament and Rheumatic Disease

Fifteen members of Parliament accepted an invitation to attend a meeting convened by the Medical Committee of the House of Commons on February 17 to discuss the formation of a Parliamentary Group to assist the Empire Rheumatism Council. Sir Francis Fremantle presided. Lord HORDER said rheumatism cost this country £17,000,000 annually in wages and in sick pay paid by the approved societies alone. Medicine was greatly in arrears in an exact survey of the field and in assaying causative factors. To fill that gap in the national health defences the Empire Rheumatism Council came into being. The Council hoped to be able to say what was really the position in this country and in the Dominions. From the Falkland Isles, Fiji, Rhodesia, and elsewhere useful facts and suggestions had been received and research into this information was being instituted. Old fallacies were being exposed. Australia, for example, showed as much rheumatism despite its sunny and dry climate as did Great Britain. This confirmed the growing belief that the climatic factor in causation had been overestimated. Climatic and environmental factors were likely to prove determining rather than primary or essential. These essential causes so far eluded research, or perhaps did not so much elude as confuse. Enthusiasts and empirics attributed rheumatism to a focus of microbic infection, to defective nutrition, to climatic, to occupational, or to nervous factors, but the problem was more complex than that. Side by side with the double task of searching for causes and of segregating types of rheumatic diseases the Council proposed an inquiry into all accepted methods of treatment now followed. In this task the staff of the Ministry of Health was with them. Lord Horder suggested that any member of either House who was willing to help the Council would be invited to join its ranks, and the Parliamentary Group would be asked to nominate members to the key committees of the Council. They could give great practical help in educating the public and in enlisting the sympathy of the leaders of industry. The Council would also look to the Parliamentary Group for advice on all questions affecting legislation and public administration. Other speakers were Sir William Willcox, Dr. Mervyn Gordon, Dr. W. S. C. Copeman, and Sir Frank Fox.

Voluntary Patients in Mental Hospitals

Mrs. TATE asked on February 17 the number of voluntary patients applying for treatment at public mental hospitals in each year since the passing of the Mental Treatment Act, 1930, and the number of these patients who were subsequently certified. Sir KINGSLEY WOOD, in reply, furnished these statistics:

Year	Admissions	Subsequently Certified
1931	1,495	65
1932	2,295	108
1933	2,961	131
1934	4,078	129
1935	5,834	181
1936	6,904	177

Figures for 1937 are not yet available.

Price of Milk to Hospitals

On February 21 Mr. W. S. MORRISON, replying to Mr. C. Wilson and Mr. Boulton, said that the milk-in-schools scheme was initiated with a view to encouraging the milk-drinking habit in children. Different considerations applied to the question of the price paid for milk by hospitals. Mr. BOULTON asked if the Minister did not think that the hospitals were receiving somewhat exceptional treatment and if he would consider some other method. Mr. MORRISON replied that at present the hospitals were getting milk at wholesale rates. He did not see why producers of milk should supply milk below cost price any more than those who supplied bandages should do so. Replying to further questions, Mr. Morrison said he was not aware of the statement that had been published that the cost of milk to hospitals had now gone up by £400,000 a year. If there had been an increase in the cost of milk to hospitals it should be compared with the price charged at the time when the whole industry was in a state of collapse, and if it had not been for the action of the Milk Board there would have been a serious shortage of milk in this country.

Maternity Services in Scotland

In replying to Mr. Westwood on February 22 Mr. ELLIOT said that agreement had been reached with the Scottish Committee of the British Medical Association on the revised terms of remuneration which they were prepared to recommend for acceptance by members of the Association for medical services under the Maternity Services (Scotland) Act, 1937. It had been agreed that the basic fee should be 40s. per case for all attendances during pregnancy, labour, and the lying-in period, including ante-natal examinations and a post-natal examination. Insured women were entitled to certain ante-natal services under the national health insurance scheme, and accordingly it had been agreed that in these cases the basic fee should be 36s. The terms would be subject to review at the end of an experimental period of two years.

Replying to a further question by Mr. Westwood, Mr. Elliot said he understood that there would be some arrangement between the local authorities and the medical practitioners to give effect to the scheme he had outlined.

Mental Hospital Patients and Matrimonial Causes Act.—On February 15 Mr. SORENSEN asked the Minister of Health what advice had been given to medical superintendents of public mental hospitals respecting patients likely to be affected by proceedings under the Matrimonial Causes Act. Mr. BERNAYS replied that the matter had not been made the subject of a general communication to medical superinten-

dents, but the Board of Control had answered inquiries from local authorities and medical superintendents in so far as it was competent for the board to advise.

Typhoid and Tinned Foodstuffs.—On February 15 Mr. BERNAYS informed Mr. Rhys Davies that in connexion with outbreaks of typhoid fever investigations had been made into the possibility of contamination from tinned foodstuffs. All articles of food and drink consumed by the patients during the material periods were considered. The Minister of Health was not aware that the source of infection in any outbreak of typhoid fever had been traced to the consumption of tinned foodstuffs.

Tyneside Health Services.—The Minister of Health has sent letters to the Northumberland County Council and the Newcastle City Council suggesting informal exploration by the two authorities of the possibility of co-ordinating public health medical services. The city council has agreed to appoint a committee to consider the matter, and the county council had the subject before them this week.

Employment of Water Engineer by Local Authorities.—On February 21 Sir KINGSLEY WOOD informed Mr. Rhys Davies that all local authorities with populations of 200,000 and over other than the Croydon Corporation had a water engineer who was employed solely for the purpose of supervising their water supply undertaking.

Pulmonary Disease among Coal Miners.—On February 22 Earl WINTERTON, replying to Mr. J. Griffiths, said that following the closure of the pit originally selected by the special committee of the Medical Research Council the investigation into chronic pulmonary disease among coal miners was transferred to the Ammanford Colliery, South Wales, early in December. Satisfactory progress was being made there, both in the medical and in the environmental inquiries. The work at this colliery would probably be completed about the end of March, after which some time would have to be given to a study of the information collected. It was proposed thereafter to extend the investigation to another anthracite colliery, but the selection of a pit would depend on the results of the work at present being done. It was not yet possible to indicate any date for the completion of the investigations as a whole.

Nutrition Investigation at Stockton.—Sir KINGSLEY WOOD, replying to a question put down by Captain Elliston on February 22, said the Stockton-on-Tees Town Council had informed him that in present circumstances it was not possible for them to release their medical officer of health, who was a full-time officer of the corporation, to undertake the proposed investigation by the Ministry into problems of nutrition. The investigation would entail about one day per fortnight for one year.

Notes in Brief

During 1937 the Minister of Health approved 4,235 orders for clearance of slum areas. The orders were made by 409 local authorities in England and Wales and affected 192,000 persons.

Patients discharged by the Board of Control from certified institutions under the Mental Deficiency Act, 1913, were: 152 in 1936 and 200 in 1937.

All local supervising authorities in the county of Devon have prepared proposals under the Midwives Act, 1936. The Minister of Health has no information of a shortage of certified midwives in that county.

Glasgow Corporation completed 1,841 houses in 1937 and 1,985 in 1936.

A memorandum for local authorities containing information relative to the Factories Act is in course of preparation.

In England and Wales approximately 1,000,000 persons remain to be rehoused from houses included in the slum clearance programmes of local authorities.

The latest figures of juveniles in attendance at the three junior instruction centres conducted by the Rhondda local education authority who have been certified as in need of supplementary nourishment show an increase on earlier figures.

At the end of January 2,121 officers, nurses, and men were receiving hospital treatment for war disabilities.

On March 31, 1937, the latest date for which figures are available, 29,385 physically defective children and 13,815 mentally defective children were on the registers of certified special schools in England and Wales.

Sir Samuel Hoare states that under the silicosis schemes the medical board can, and often does, give a certificate where the silicosis is not the primary cause of death but is a secondary and accelerating cause.

The cost of the research work at present directed by the Industrial Health Research Board is approximately £9,500 yearly. The programme has not included any research into rheumatism.

SOCIETY OF APOTHECARIES' DINNER

The Society of Apothecaries of London held a Livery Dinner on February 22 at the Hall of the Society, the Master, Mr. Hugh Lett, being in the chair. After the loyal toasts had been honoured the health of the Society was proposed by Sir StClair Thomson, who introduced himself in the terms of the title of one of Priestley's plays—"I have been here before." The first occasion was in 1881, when, after an interview with the examiners at Apothecaries' Hall, he had sent off the following telegram: "Dearest Mother, I am licensed to kill." This, he said, launched him on fifty-seven years of happy work in the medical profession. As he was now enjoying *otium cum dignitate* he had avoided "mugging up" an impromptu speech. Sir StClair's discourse then centred upon a plaque of glazed pottery bearing the Arms of the Society, which he was about to present to it. After sketching the history of Lambeth pottery from the days of Charles I to George III he gave a racy account of the anatomy of heraldry, which he linked up with the perennial youth of the Society of Apothecaries.

In response the Master said that Sir StClair Thomson had long been known as "the honey-tongued Nestor" of our profession. In briefly recording recent events in the life of the Society he referred to the fact that during the past few months they had promoted to the Livery Mr. W. T. Withers, who had come to the Society as assistant bedel in 1887. It was not possible, Mr. Lett continued, to overstate the value Mr. Withers had been to the Society, and in welcoming him to the dinner he presented him with a memento from a past Master. He drew attention to the special lighting of the pictures "in the next room," and told the story of how Sir Joshua Reynolds had managed to get Hunter to sit for a portrait without a beard; the one with a beard was at Apothecaries' Hall and the one without at the Royal College of Surgeons. Mr. Hugh Lett also mentioned a tablet of Robert Harris, a Master of the Society in 1687, which had been discovered in Wisbech. Finally he thanked Sir StClair Thomson for the valuable plaque he had presented. The health of the guests was proposed by the Junior Warden, Mr. L. Vernon Cargill, who mentioned that both he and Sir StClair Thomson had been house-surgeons to Lister. In welcoming Dr. G. C. Anderson, the Secretary of the British Medical Association, he reminded those present that the Society of Apothecaries, together with the B.M.A., had formed the *Register of Medical Auxiliaries.*

Replying for the guests, Dr. Anderson returned thanks for the kindly hospitality they had all received. He recalled that in his student days he was taught that at times it was necessary to administer a corrective, and lately it had been his task to consider what correctives should be administered as regards medicine to the public of this country through the Press. A doctor drunk in charge of a car was "news," as he always was when he got into trouble. They should try to make news of the more normal and pleasanter aspects of his professional life.

No. 6

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended February 12, 1938.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for : (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland. Median values for the last 9 years for (a) and (b).

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for : (a) The 125 great towns (i) in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns (ii) in Eire. (e) The 10 principal towns (iii) in Northern Ireland.

A dash — denotes no cases ; a blank space denotes disease not notifiable or no return available.

Disease	1938					1937 (Corresponding Week)					1929-37 (Median Value Corresponding Weeks)	
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)	(a)	(b)
Cerebrospinal fever	35	6	11	—	—	33	7	3	4	1		
Deaths		1	2				8	3				
Diphtheria	1,738	203	279	78	43	1,212	166	216	44	37	1,345	204
Deaths	29	3	6	2	1	30	1	5	6	—		
Dysentery	242	91	129		—	19	4	1		—		
Deaths				—	—				—	—		
Encephalitis lethargica, acute	2	—	1		—	8	—	2	1	—		
Deaths		2					1					
Enteric (typhoid and paratyphoid) fever	21	3	5	9	1	49	8	4	3	1	24	—
Deaths	1	—	—	—	—	3	1	—	—	—		
Erysipelas			75	8	7			74	6	5		
Deaths		2					2					
Infective enteritis or diarrhoea under 2 years												
Deaths	65	20	9	8	5	45	11	5	3	3		
Measles			1,551		617*			57		2		
Deaths	40	6	20	—	19	5	—	—	3	1		
Ophthalmia neonatorum	108	9	33		1	87	5	28		1		
Deaths												
Pneumonia, influenzal§	1,155	79	6	5	25	2,539	94	119	88	20	1,974	173
Deaths (from Influenza)	40	3	5	—	2	697	50	64	51	21		
Pneumonia, primary			220	18				248	11			
Deaths		16		28	19		19		48	20		
Polio-encephalitis, acute	1	—				1	—					
Deaths		—					—					
Poliomyelitis, acute	9	1	—		1	13	5	—		—		
Deaths		—					—					
Puerperal fever	7†	7	18	2	—	35	2	24	8	1		
Deaths		2‡					—					
Puerperal pyrexia	177	13	24		2	127	11	16		3		
Deaths												
Relapsing fever	—	—	—	—	—	—	—	—	—	—		
Deaths	—	—	—	—	—	—	—	—	—	—		
Scarlet fever	2,326	193	471	108	83	1,456	153	362	72	36	1,999	242
Deaths	6	—	1	—	1	3	2	1	2	—		
Small-pox	—	—	—	—	—	—	—	—	—	—		
Deaths	—	—	—	—	—	—	—	—	—	—		
Typhus fever	—	—	—	—	—	—	—	—	—	—		
Deaths	—	—	—	—	—	—	—	—	—	—		
Whooping-cough			58		8			710		11		
Deaths	24	4	3	—	1	39	10	14	5	—		
Deaths (0-1 year)	*458	76	80	52	38	428	75	88	40	22		
Infant mortality rate (per 1,000 live births)	76	63				68	62					
Deaths (excluding stillbirths)	4,866	921	712	228	178	6,581	1,151	914	377	219		
Annual death rate (per 1,000 persons living)	12.0	11.6	13.4	15.4	15.8	16.4	14.3	17.3	25.7	21.0		
Live births	6,688	1,271	913	313	232	6,479	1,305	914	333	236		
Annual rate per 1,000 persons living	16.5	16.0	18.6	21.1	20.6	16.1	16.3	18.7	22.7	22.6		
Stillbirths	301	49				274	39					
Rate per 1,000 total births (including stillborn)	43	37				41	29					

(i) 122 great towns in 1937.
(ii) 12 " " " "
(iii) 9 " " " "

* 577 cases in Belfast alone.
† After October 1, 1937, puerperal fever was made notifiable only in the Administrative County of London.

‡ Deaths from puerperal sepsis.
§ Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

EPIDEMIOLOGICAL NOTES

Enteric Fever

One further case of typhoid fever in the Somerset outbreak was notified during last week, the number now being 40, while the addition of one fatal case brings the total number of deaths to 6.

Dysentery

Bacillary dysentery appears to be on the increase in England and Wales, the notifications for the week being 242 compared with 215 in the previous week. For London the figures are 91 and 50 respectively. The increase affected chiefly the home counties: there were notified in Middlesex 23 cases, in Essex 9, Kent 15, Surrey 11; in all areas the disease was widely scattered in both urban and rural districts. In London boroughs the figures were as follows: Wandsworth 35, Shoreditch 6, Kensington 5, Islington 5, and 4 each in Chelsea and Holborn.

Diphtheria

Notifications of diphtheria in England and Wales continue to drop, there being 1,738 for the week compared with 1,874 in the previous week; the London figures remained almost stationary. The deaths in England and Wales for the week have been 29, compared with 37 in the previous week, and 3 compared with 4 in the county of London. In Eire notifications rose from 58 to 78, while in Scotland and Northern Ireland they were practically the same. Diphtheria appears to have increased in incidence and severity in Leeds, in which town 37 cases were notified compared with 19 in the previous week; during this period there were 2 fatal cases, while in the previous week no deaths were reported. The incidence in the West Riding (Yorks) has declined slightly from 221 to 207, in Bradford from 30 to 13, and in Sheffield from 49 to 45.

Scarlet Fever

The incidence of scarlet fever in England and Wales has dropped during the week from 2,417 to 2,326, but is still greater than the median value for the last nine years—1,999. In London notifications have increased from 168 to 193, but the numbers remain well below the median value of 242.

Measles

During the week under review there were in England and Wales 40 deaths from measles, as compared with 27 in the previous week. The principal towns affected were Greater London 7 (7), administrative county of London 6 (3), Liverpool 15 (6), Manchester 6 (5), Bristol 2 (1). The figures in parentheses denote the deaths in the previous week. During the same period 1,417 cases were reported from the L.C.C. elementary schools, compared with 1,152 in the previous week, and the average daily admissions to the L.C.C. fever hospitals were 53 compared with 39 for the previous week. During the same week 31 cases were notified in Stepney, 11 in Shoreditch, 7 in Bermondsey, making a total of 49 compared with 37 last week. There were no notifications of measles in the Port of London during the week under review. It should be emphasized that these figures refer to cases reported to the London County Council, from whose weekly returns they are taken. Measles is notifiable in certain metropolitan boroughs, the actual number and the conditions of notification varying from time to time. At present all cases of measles are notifiable in only one borough—namely, Fulham. In the boroughs of Battersea, Finsbury, Greenwich, Hampstead, Lambeth, Southwark, and St. Pancras the first cases of measles occurring within two months only are notifiable—that is, subsequent cases in a family are not notifiable unless an interval of two months has elapsed since the notification of the first case. In the boroughs of Shoreditch, Stepney, and Bermondsey notifiable cases are further restricted to children under 5 years of age.

In Scotland notifications of measles during the week have risen from 1,330 to 1,551, and the deaths from 17 to 20, the increase affecting chiefly Glasgow, where the figures rose from 1,020 to 1,245, while the deaths rose from 11 to 17. In Edinburgh the notifications rose from 119 to 121, while the deaths fell from 4 to 2. In Belfast the cases fell from 789 to 577, and the deaths from 25 to 19. In Dundee the cases rose from 18 to 38, and in Aberdeen from 7 to 10.

Medical News

A public meeting has been arranged on Thursday, March 3, at 8 p.m., at the Royal Society of Arts, 18, John Street, Adelphi, W.C., for a debate on "The True Path to National Fitness." The chair will be taken by Professor V. H. Mottram, and the speakers will include Professor W. E. Le Gros Clark, Miss Marjorie E. Green, and Professor J. R. Marrack. Tickets (6d. and 1s.) may be obtained at the door or from the honorary secretary, Committee against Malnutrition, 19c, Eagle Street, Holborn, W.C. A small book, *National Fitness—a Brief Essay on Contemporary Britain*, was published on February 8 by Messrs. Macmillan Ltd. at 6s. net. Some of the above speakers participated in the preparation of this book, which contains a foreword by Major-General Sir Robert McCarrison. The aim of the authors has been to provide in readable form the essential facts and figures for a critical study of this vital problem.

The following postgraduate courses will be held at the Hamburg Institute for Tropical Hygiene during 1938: (1) March 21 to April 9, course for ship doctors in the diagnosis and treatment of the most important tropical diseases occurring on shipboard; (2) July 11 to 30, Spanish course in tropical medicine for doctors, veterinarians, and zoologists; (3) October 3 to December 3, international course in tropical medicine and hygiene for doctors, veterinarians, and zoologists. Further information can be obtained from Institut für Schiffs- und Tropenkrankheiten, Bernhard Nochtstrasse 74, Hamburg, 4.

A discussion on illumination levels and comfort conditions as applied to the lighting, heating, and ventilating problem will be held at a joint meeting of the Illuminating Engineering Society with the Institution of Heating and Ventilating Engineers in the Hall of the Institution, Storey's Gate, St. James's Park, S.W., on Tuesday, March 1, at 7 p.m.

The German Institute of Psychological Investigation and Psychotherapy is organizing a postgraduate course from April 25 to 30. Further information can be obtained from the Institute, Budapesterstrasse 29/11, Berlin, W.62.

The eleventh annual meeting of the German Society for the Study of the Circulation will be held at Bad Nauheim on March 26 and 27; the main subject for discussion will be circulatory failure, and papers will be read on muscle tonus as a factor in post-operative shock; arterio-venous aneurysms; and capillary permeability. Further information may be obtained from Professor Eb. Koch, Kerchoff Institute, Bad Nauheim.

The fiftieth Congress of the German Paediatric Society will be held at Wiesbaden from March 26 to 31 in conjunction with the German Society of Internal Medicine. Further information can be obtained from the general secretary, Professor Goebel, Akademische Kinderklinik, Moorenstrasse 5, Dusseldorf.

On February 21 fire seriously damaged one of the laboratories at Elstree of the Lister Institute for Medical Research, but valuable apparatus and other material were saved. On the discovery of the fire some members of the staff fought it with hand extinguishers, while others removed most of the contents of the laboratory. Two fire brigades succeeded in confining the outbreak to one building.

In May, when the Dutch Gynaecological Society celebrates its fiftieth anniversary, an international obstetrical and gynaecological congress will be held. The secretary of the congress is Dr. C. F. van Tongeren of Amsterdam. The subjects for discussion are eclampsia, thrombosis and embolism, and hormones.

The King has appointed Dr. Robert William Cooper and Dr. Norman Bennington Watch as Members of the Order of the British Empire (M.B.E.) for services rendered in connexion with the recent volcanic eruptions in the Mandated Territory of New Guinea.

Dr. Nanna Svartz-Malmberg, author of important work on intestinal bacteria and their influence on rheumatic diseases, has been appointed professor of medicine at the Stockholm Caroline Institute. She is the first Swedish woman to be appointed professor.

Professor Ernst Kretschmer, director of the Marburg University Neurological Clinic, has been elected a corresponding member of the Society of Neurology and Psychiatry of Buenos Aires.

A new journal dealing with the physiology and pathology of old age, entitled *Zeitschrift für Altersforschung*, began in January under the editorship of Professor E. Abderhalden and Professor M. Bürger. The journal will appear quarterly, and is published by T. Steinkopff of Dresden and Leipzig.

Dr. Milan Yovanovitch-Batut, doyen of the Yugoslav medical profession and doctor *honoris causa* of the Belgrade faculty of medicine, has recently celebrated his ninetieth birthday.

Sir Ernest Graham-Little, M.P., has been elected an honorary member of the Argentine Dermatological Society.

Dr. Georges Guillaim, professor of neurology in the Paris faculty of medicine, has been elected president of the Société Médicale des Hôpitaux de Paris.

Professor Fernand Bezançon has succeeded Dr. Martel as president of the Académie de Médecine.

The editorship of the journal entitled *Archivo di Anthropologia Criminale, Psychiatria e Medicina Legale*, founded by Cesare Lombroso and subsequently edited by Carrara, has this year been handed over to Professor Leone Lattes, professor of forensic medicine at Bologna.

Dr. L. M. Pierron, general secretary and founder of the Federation of the Latin Medical Press, editor of *Acta Medica Latina* and founder and editor of the *Revue française de Gynécologie*, has been made a Commander of the Crown of Italy by the King of Italy.

The King Edward Hospital Fund for London has bought a special car for conveyance of radium in connexion with the Central Radium Pool which it has established for the benefit of London hospitals.

One of the largest tuberculosis hospitals in the world is shortly to be inaugurated in Buenos Aires. The Government has made a grant of 3,000,000 pesos (about £200,000) for its erection and of 1,000,000 pesos (£66,000) a year for its upkeep. When finished the hospital will stand fourteen stories high on a fifteen-acre site near the centre of the city, which is to be planted with pine, eucalyptus, and other trees with medicinal qualities. It will be equipped for the treatment of 1,200 indoor patients and for research, and will be the headquarters of a national anti-tuberculosis campaign.

A statue of Hippocrates, presented by Dr. Skeros Zervos of Athens, was recently unveiled at the Académie de Médecine.

The Japanese Minister of the Interior has drawn up a Bill for rendering compulsory periodical examination of all the inhabitants up to the age of 40.

According to official statistics for 1937 Belgium possesses 6,311 doctors, or one doctor per 1,315 inhabitants. In the large towns the number of doctors is much higher: Brussels has 1,370 (1 per 605 inhabitants), Antwerp 436 (1 per 1,068), Ghent 242 (1 per 889), and Liége 416 (1 per 605).

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone, unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Secretary, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS should be addressed to the Advertisement Manager. Orders for copies of the *Journal* and communications with reference to subscriptions should be addressed to the Secretary, B.M.A. House, Tavistock Square, W.C.1.

The TELEPHONE NUMBER of the British Medical Association and the *British Medical Journal* is EUSTON 2111.

The TELEGRAPHIC ADDRESSES are
EDITOR OF THE *BRITISH MEDICAL JOURNAL*, *Aitiology Westcent, London.*
SECRETARY, *Medisecra Westcent, London.*

The address of the B.M.A. Scottish Office is 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh;* telephone: 24361 Edinburgh), and of the Office of the Irish Free State Medical Union (I.M.A. and B.M.A.), 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin;* telephone 62550 Dublin).

QUERIES AND ANSWERS

Sulphanilamide and Sulphaemoglobinaemia

Dr. JULIAN KASTELIAN writes from the Westminster Hospital: There appears to be a danger in the indiscriminate use of sulphur-containing barbiturates (for example, pentothal) intravenously for short anaesthetics. If the patient is receiving treatment with *p*-aminobenzenesulphonamide (that is, prontosil and related compounds) and minor surgical intervention becomes necessary, an intravenous barbiturate will often be considered. Should, however, a "thio" group be present, as is the case with pentothal, the patient is possibly in danger of sulphaemoglobinaemia. It would be interesting to learn if any such cases have been recorded.

The "Emergency Bag"

Dr. E. G. HOUSDEN (London, S.W.17), in replying to "Ex-Service" (*Journal*, February 5, p. 320), writes: During the past fifteen years in general practice I have evolved the following "emergency outfit." I use a single case, 15 in. by 10 in. by 5 in., containing: (1) a wooden box, 7¾ in. by 6¼ in. by 5 in., for dressings, pins, a small kidney dish, a rubber catheter, and strapping; (2) a wooden box, 4½ in. by 6½ in. by 5 in., for sutures, hypodermic syringe in spirit, needles, microscope slides, finger-stalls and vaseline, silver nitrate stick, and drugs (tablets for hypodermic administration; amyl nitrite, ephedrine, calomel, phenacetin, aspirin, Dover's powder; ampoules of coramine, adrenaline, salyrgan, S.U.P., and iodine); (3) diagnostic instruments—electrical set, sphygmomanometer, throat swabs, patella hammer, and tape-measure; (4) wallet containing national health insurance prescriptions and certificates, private prescription pad, and stationery; (5) tube of ethyl chloride and vaccination set; and (6) case of dressing instruments. The case can be so packed as to prevent rattling, and includes all immediate necessities.

Dr. C. C. H. CHAVASSE (London, W.9) also writes: The following is a useful collection: instrument case with scalpel, artery and one pair dissecting forceps, and scissors, preferably in spirit; 5-c.cm. hypodermic syringe in spirit in a case; cutting needles, staghorn beetle clips (Allen and Hanburys), and silk and horsehair sutures; vaccination scarifier; eyelid elevator; tablets for hypodermic administration of morphine, atropine, digitalis, ergotin, hyoscine; corpora lutea ampoules, S.U.P. 36 in ampoules, and ampoules of adrenaline and morphine; one three-inch bandage, one elastoplast bandage, and one cellonal bandage, with packets of sterilized wool and gauze; bottles of iodine and of spirit; one tube or container of wool for the application of iodine; sodium bicarbonate, tannafax, insulin, anti-tetanus, gas gangrene, and

anti-diphtheritic serum; stethoscope, patella hammer, two thermometers, and a spare hypodermic syringe; prontosil and tab. aspirin. co. tablets; a tube for gastric lavage, which can also be used as a tourniquet; lastly a tracheotomy tube.

Primary Vaccination at the Age of 12

Surgeon Captain PERCIVAL M. MAY (London, S.E.10) writes in answer to "Chelsea" (*Journal*, February 19, p. 432): For a period of some thirteen years at the Royal Hospital School, Greenwich, where all new entrants had to be vaccinated, the total number of boys admitted was between three and four thousand. They were aged from 11 to 13 years, and there was a gradually increasing proportion (in 1930 28 per cent.) of primary vaccinations. The possibility of post-vaccinal encephalitis was ever in my mind, after I had become aware of such a rare sequel, but I never had a single case, and after adopting the intradermal "multiple pressure or prick" technique, as recommended and described by Leake (1927) of the U.S. Public Health Service, the number of cases of vaccinia, and the days of sickness from vaccinia morbidity, were markedly lowered. The vaccine employed was in all cases obtained from the Government Lymph Establishment and used within a week of its receipt.

Income Tax

Division of Partnership Profits

"QUERIST" is a partner with two other practitioners. Up to January 1, 1938, the profits were divided in the ratios of A 3/7, B 2/7, C 2/7, but as from that date the ratios have been 3/7, 3/7, 1/7 respectively. What alterations will this change necessitate in the division of the tax charged for 1937–8?

*** The existing division is of course based on an alteration of the gross assessment on the old ratios. In fact the ratios should be those in which the profits have been divided for the year ending April 5 (or, say, March 31), 1938—that is, A 12/28, B 7/28, and C 9/28. When a reallocation of the gross assessment is made on the basis of these figures, and the appropriate deductions are made for each partner and the tax on the respective net amounts calculated, the alterations in the division of the tax assessed on the firm will be apparent.

Change in Partnership—Cash Basis

"CAPITAL" explains that A., B., and C. have been in partnership, and for some years have been assessed on the cash basis. A. is retiring on June 30, but will continue to receive his share of the cash received for work done prior to that date. How will this affect the income tax returns?

*** It should be borne in mind that the "cash basis" is merely a convenient way of measuring the gross earnings of a practice. A. will not be chargeable to tax on the cash received after June 30. The sums he then receives will represent the realization of income earned prior to that date, and he will have accounted for tax on those earnings. As regards the period after June 30, B. and C. will presumably have the alternative of (*a*) departing from the cash basis in favour of bookings less a deduction for bad and doubtful debts, or (*b*) adhering to the cash basis provided that they include *all* receipts from the practice work—that is, those taken by A. as well as those shared by B. and C.

LETTERS, NOTES, ETC.

Insulin Therapy in Schizophrenia

Dr. G. W. B. JAMES writes: In the *British Medical Journal* of February 19 you kindly report a joint paper by myself and others on insulin therapy in schizophrenia. Your reporter concluded that the film projected to illustrate the manifestations of schizophrenia was taken by Kodak Ltd. I feel I must write to explain that the film was entirely taken by myself or my co-workers. I would ask you to correct the impression given that this film was taken by Kodak Ltd. and is therefore available in their medical library of films. The Medical Department of Kodak Ltd. has given much assistance in the editing of the film and in advising me in my early days as a film director, and I owe them a deep debt of gratitude. This letter gives me an opportunity of saying that I have long been keen on the cinema as a means of teaching, and I feel very strongly that it can be made to play a useful part in illustrating lectures on psychiatry.

"The Evolutionary Theory"

Colonel G. F. ROWCROFT, D.S.O., writes from Coonoor, S. India: In a review in your issue of November 27, 1937, p. 1071—"Experiments on Animals"—the reviewer says (1) that the Darwinian hypothesis has "abundantly justified itself." Has it? He likewise says (2) that the younger medical man of these days views with a detached interest the arguments of the opponents of evolutionary theory. In many cases, unfortunately, quite true. Why? He also politely states (3) that the logical anti-vivisectionist suffers from pseudo-paranoia, and that he ought to be "an anti-vaccinationist, a vegetarian, and an opponent of the germ theory of disease." Why? And that "many of them are all these things." Are they? Such remarks savour rather of ex-cathedra omniscience, and I venture to think would hardly be sustained by an accurate census. A few such, a very few, there may be; which only shows that you may find all kinds of ideas in any body of even educated men. An anti-vivisectionist need not necessarily subscribe to the above ideas; he is as much entitled to his own opinions as anyone else, and to stress that because he holds such opinions on certain points he must necessarily and logically "go the whole hog" and hold others which may be supposed to arise from them is simply to strain arguments *ad absurdum*. To answer (2) above: As regards the "evolutionary theory" (which your reviewer very rightly designates a theory, not a fact) I presume this is intended to mean the theory that man, *Homo sapiens*, has been evolved by slow degrees from an ape-like ancestry, this ancestry in its turn having been evolved from some unicellular organism. "Evolution" in the sense of progress and many forms of development all will admit, but not the above "theory." It is not only "younger medical men," but unfortunately the rising generation generally—not to mention their fathers—who largely believe in the theory, for two reasons: (*a*) they find it believed in by their elders as a proved fact, and (*b*) the seeming arguments for it are in many schools drilled into them from childhood, its manifest impossibilities being suppressed and the unanswerable arguments against it being withheld. They very naturally accept it. Imagining the theory proved, without any further inquiry they of course look on its opponents as benighted beings. As regards my opening remarks under (1), to say that the "Darwinian hypothesis has abundantly proved itself" is simply an *ipse dixit*. If its upholders really think so they must be remarkably easily satisfied. In a letter already too long it is impossible to argue such a point, but I may remark that Darwin himself saw endless objections to the belief, though he propagated it. Haeckel, a most subtle writer on the subject (but in whose arguments numerous fallacies can be detected by the careful reader), admitted that many of his illustrations were deliberately faked in order to make them fit the theory. In later years he was compelled to write: "Most modern investigators have come to the conclusion that the doctrine of evolution, and particularly Darwinism, is an error and cannot be maintained" (*Fundamentals*, vol. iii, p. 29).

Anxiety State Treated by Hypnosis

Dr. R. W. P. HALL (Windermere) writes: I feel that the following case is of interest in view of the length of time the symptoms had persisted, and also the complete lack of response to previous medical treatment. The patient, a woman of 39, married, no children, had been very nervous and sensitive from childhood. The remainder of the family, including her mother, were very unimaginative people who had no patience with her ailments. She had at various times been treated by means of sedatives and good advice, but in spite of these measures her symptoms became more marked and numerous. I first attended her after she had been carried back from a short walk, having had a "heart attack." On examination she was found to have a rapid irregular pulse, with shortness of breath and slight cyanosis. Other symptoms elicited, and confirmed by her husband, were: (1) insomnia; (2) dysmenorrhoea associated with severe neuralgia; (3) dyspepsia; (4) an overpowering fear of all social life on account of the heart attacks, which were an almost daily occurrence. Her idiosyncrasy towards sedatives was confirmed during the first day or so, and it was then proposed that she should have a course of treatment by hypnotic suggestion, to which she agreed. Beginning with the insomnia, all her symptoms cleared up in the course of fifteen treatments extending over seven weeks. The only drug given was gardenal, half a grain night and morning during the first three weeks, but

as she had been given luminal on a previous occasion with no effect one could not put down her improvement to this drug. Before she had the last two treatments she confessed to a great dread of her mother, who was due for a visit lasting ten days, and whose presence on previous occasions had precipitated more acute attacks. Suggestions countering this state of mind were given on the last two occasions, with the result that at the end of the ten days she asked her mother to stay for a further two weeks, and complete harmony reigned throughout the visit. Nine months have elapsed since her last treatment, and she has remained quite well in every respect.

Treatment of Pneumonia

Dr. R. LARKIN (London, S.E.1) writes: It is impossible to believe that the figures given in the leading article in the *Journal* of January 29 (p. 235) for the mortality rates for pneumonia, in this country as compared with America, are correct. If they are correct, and two out of every three pneumonia patients die in England and Wales to one out of every six in America, then it is time the profession learnt to rely on drug therapy instead of on antipneumococcal sera, oxygen, etc. I remember a doctor from Africa saying in the columns of the *Journal* that he found quinine excellent—so do I in Southwark. Here are the prescriptions I am constantly using—disregarding the possibility of tinct. camph. co. being precipitated as benzoic acid—and in practice I find it is nearly always effective in all types of pneumonia, except, of course, in bronchopneumonia:

℞	Quin. sulph.	gr. xij
	Acid. nit. dil.	gr. xij
	Potass. citrat.	gr. xxiv
	Tr. camph. co.	ʒ iij
	Tr. scillae	♏ xxx
	Salicin	gr. xij
	Aq. chloroform.	ʒ ss
	Aqua .. .. ad	ʒ vj

Sig. One tablespoonful 4-hourly in water after meals.

	Aspirin	gr. v
	Phenacetin	gr. iv
	Caffein citrate	gr. i

Mitte 6. One half-tablet of each every four hours after medicine.

If there is any associated bronchial catarrh, it is convenient to add vin. ipecac. and tinct. senega in small doses. If on academic grounds the incompatibility of the tr. camph. co. is objected to, a way out for the inclusion of the drug in treatment would be to give it in the form of linct. scill. opiat. (B.P.C.) for the associated cough, for I believe it is essential.

Sex Hormone Therapy

Bayer Products, Limited, have just issued a booklet entitled "Sex Hormone Theory in Everyday Practice," which is a handy guide to those wanting easily available information in this difficult field of practice. In twenty-five pages seven chapters are devoted to the menstrual cycle, the cause of menstrual bleeding, treatment of menstrual disorders, treatment of disorders of pregnancy, endocrinology of the mammary glands, treatment of male disorders, and oestrin and cancer respectively. Then follows a list of Bayer hormone preparations and indications for treatment. The booklet can be obtained free on application to Bayer Products Ltd., Africa House, Kingsway, London, W.C.2.

A Medical Shorthand Writer

A familiar figure at meetings of medical societies has passed away in the person of Henry Dickinson, official shorthand writer to the Royal Society of Medicine, the Royal Medico-Psychological Association, the Royal Society of Tropical Medicine and Hygiene, the Medical Society of London, the Ophthalmological Society, the Hunterian Society, the Medico-Legal Society, and many other bodies. About forty years ago, a Pitman enthusiast, Dickinson eschewed a wider field for the employment of his flying pencil (or, rather, his pen, for the pencil he scorned as an unworthy tool) and specialized in the reporting of medical proceedings. It was a narrow line, but he cultivated it assiduously, and, in his prime, medical men would swear by "Dickinson's note." If a speaker had a suspicion that he had not said exactly what was attributed to him, such a suspicion was completely dispelled by the production of those copper-plate pages. There it was, in thick strokes and thin. His longest tenure was his reportership of the Medical Society of London, which went back for thirty-nine years. He was reporter for several of the bodies which amalgamated in 1907 to form the Royal Society of Medicine, and he remained reporter for that body until his death. Many years ago he published a small manual entitled *Medical Reporting in Pitman's Shorthand*, in which he gave the shorthand forms for between three and four thousand medical words and phrases, along with some good advice to those who record medical discussions or act as doctors' amanuenses. The student of the published proceedings of various medical societies in years to come, while he will probably never learn the name of the scribe who set them down in clear and orderly form, will have occasion to be grateful for his patient and skilful work.

Austrian Medical Stamps

Medical stamps are becoming slowly but increasingly popular in different countries. On December 5, her annual "Day of the Stamp," Austria issued an attractive set of nine stamps commemorating her most distinguished medical sons. The likenesses are extremely good, the portraits being effectively set against a dark background. Van Swieten is depicted in the sepia 5 groschen stamp, Auenbrugger on the red 8, and Rokitansky on the grey 12. Skoda looks characteristically pedantic and dull on the green 20 stamp, while Hebra's appearance on the violet 24 is that of a genial *bon-vivant*. The carmine 30 represents von Arlt and the violet-red 64 Theodor Meynert. Perhaps the most striking portraits are those of Joseph Hyrtl, the anatomist (olive green 40), and of Billroth (blue 60).

Magnifiers in Spectacle Frames

Dr. A. J. BALLANTYNE (Glasgow) writes: Dr. F. Oliver Walker's short communication in the *Journal* of February 12 (p. 339) was of interest to me as I have had magnifiers of very similar construction in use for many years. The arrangement was suggested to me by a one-eyed patient, who had fitted a skeleton watchmaker's glass by fixing it to his own spectacle frame. Taking his hint, I got Messrs. John Trotter Ltd., opticians in Glasgow, to make a similar fitting for trial. Since then many patients have used this contrivance with satisfaction. These have mostly been cases of amblyopia, where magnification enabled the patient to read. The lens of the watchmaker's fitting can be made of any convenient strength, and the arrangement has the advantage that, being worn as a spectacle frame, both hands are available for holding a book, and as the watchmaker's fitting folds up the spectacles go into an ordinary flat case.

Medical Books for Surgeons in Spain

The Organizing Secretary of the Spanish Medical Aid Committee (24, New Oxford Street, W.C.1) writes: I have received a request from Spain for the *Annals of Surgery*, 1937 (published by John Wright and Sons Ltd., Bristol), and *Surgery, Gynecology and Obstetrics*, 1937 (published by Baillière, Tindall and Cox). We are anxious to send these out to the surgeons who require them, but are equally anxious not to draw on our funds for this purpose if it can possibly be avoided, and we wonder, therefore, whether any of your readers would be prepared to send us these for use in Spain.

Albuminuria and Bromides

Dr. S. J. HAYLOCK (Southbourne-on-Sea) writes: In cases of albuminuria from whatever cause the intake of bromides in medicinal doses tends to aggravate the condition, and to cause skin eruptions, etc. Patients suffering from albuminuria are advised not to take table salt. I would suggest also that no form of bromide be prescribed for them.

Corrigenda

We are asked to correct an error in the report of the opening of the new premises of the Institute for the Scientific Treatment of Delinquency published at page 416 of our issue for February 19. Dr. E. T. Jensen, chairman of the Institute, in expressing thanks to Lord Roche, said that he envisaged "*an international Institute of Criminology*," not "a large national" one.

In the Analysis of Cases of Sympathetic Ophthalmia from Schools for Blind Children published last week at page 393, in the fifth line of the second column "ophthalmia neonatorum" should of course have been "*sympathetic ophthalmia*."

The date in the first line of the second paragraph of the description of Case 1 in Dr. R. Stuart Renton's letter in the *Journal* of February 19 (p. 422) should be December 17 and not December 7 as printed.